

July 2026

14th Edition

SWR

Magazine 1:1

ISSN: 3068-7233

THE JOURNEY OF A SIGNAL

THE 0.2 SECONDS THAT CHANGE THE WORLD

SUMMER IN HAM RADIO

WHEN THE SUN OPENS THE BANDS

ICOM X-026

THE SPIRITUAL SUCCESSOR TO THE IC-7100 AND THE FUTURE OF MOBILE HAM RADIO?

OTHER BANDS

LF, MF, AND MICROWAVES...
THE FRONTIERS OF THE
RADIO SPECTRUM

www.swrmagazine.org

Introduction

On the Cove

On the cover of this issue of SWR Magazine, you'll find a scene that captures the very essence of portable ham radio operating: a field station set up in the heart of nature, where technology and the outdoors come together in perfect harmony. The rig rests on a simple operating table, ready for action during a POTA (Parks on the Air) activation. Surrounding it, the open landscape is a reminder that ham radio isn't confined by walls or schedules it's driven by the passion of those who enjoy the hobby. It's an image of communication without boundaries, where every transmitted and received signal travels far beyond what the eye can see.

Photo by: Mike Olsen W6OBB



With this cover, we welcome the arrival of summer in the Northern Hemisphere a season that has long inspired hams to leave their home shacks behind and explore new operating locations. Fields, parks, mountains, and coastlines become the perfect setting to experiment, learn, and share contacts on the air. Summer brings not only longer days, but also more opportunities to activate parks, test portable antennas, refine field operating skills, and strengthen the bonds within the ham radio community. At SWR Magazine, we celebrate this season as an invitation to radio adventure: get outside, set up your station, and let the bands do the rest.

SWR Magazine

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SWR Magazine

Connecting Passions. Inspiring Operators.
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Photo by: Pedro Perez Heredia

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Ham radio teaches us that even amid the noise of the modern world, a simple signal can open invisible paths, bridge impossible distances, and connect people beyond every border.

DXE-3X10 SkyHawk

Efficient directional performance for HF without complications



The DX Engineering DXE-3X10 SkyHawk is a directional Yagi antenna designed for the 20, 15, and 10 meter bands, specifically aimed at HF operators looking for solid performance in DXing and contesting. Its computer-optimized design provides over 7 dBi of gain across all bands, along with an excellent front-to-back ratio that significantly improves directivity and rejection of unwanted signals.

One of its strong points is its construction: lightweight, wind-resistant, and with virtually zero torque on the mast, making it ideal for moderate tower installations without the need for complex support systems. It also uses corrosion-resistant materials and stainless steel hardware, ensuring long-term durability.

In practice, it is a "plug-and-play" antenna: it requires no fine tuning after assembly, which makes installation easier even for radio amateurs with less experience in directional antennas. In summary, the SkyHawk 3X10 is an excellent option for those who want to step up to an efficient, reliable, and relatively easy-to-install triband beam, with a very attractive balance between performance and complexity.



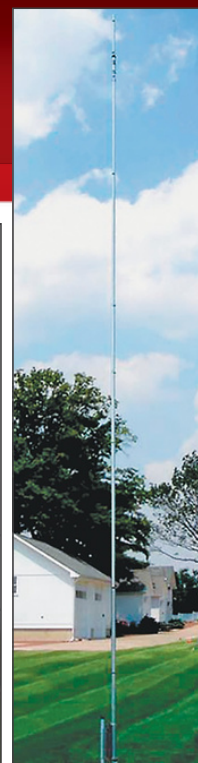
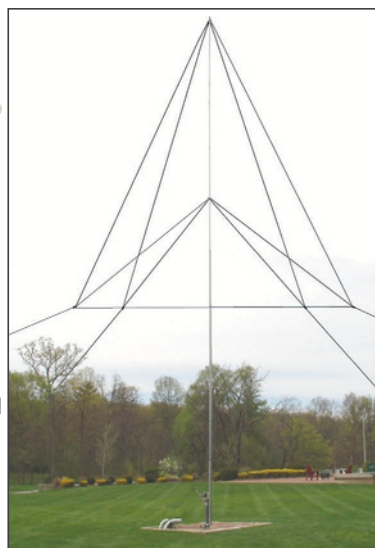
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Make the Change to a More Satisfying Ham Radio Purchasing Experience

EDITORIAL

A SUMMER OF SIGNALS, PROJECTS, AND NEW HORIZONS



Photo by: Reddit

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<https://forms.gle/DDhwNTQpFdpdWBZ87>



W

ith the arrival of the summer of 2026, we also begin a new chapter for our ham radio community. As has become tradition, we welcome the season with one of the year's most

anticipated events: ARRL Field Day a weekend when thousands of hams around the world demonstrate that amateur radio remains a powerful platform for communication, learning, public service, and friendship.

Every Field Day reminds us that, beyond the rigs and antennas, the true heart of this hobby is its people. It's the families who share a field operation, the newly licensed hams making their first QSOs, the experienced operators passing along their knowledge, and the clubs that dedicate countless hours to keeping this remarkable hobby alive.

As we move into the second half of the year, the calendar is already filling up with new opportunities. Conventions, special event stations, contests, DXpeditions, educational activities, and community projects await us in the months ahead. There's no doubt this will be a season filled with experiences that will make our ham radio community even stronger.

At SWR Magazine, we're also entering an exciting period of growth. Every new issue represents the dedication of a team committed to delivering high-quality content for hams of every experience level. Seeing our magazine reach new readers across more countries continues to inspire us to innovate and raise the bar with every edition.

With that in mind, we're excited to introduce several new projects in the months ahead that will further enrich the experience of our readers. We're developing new sections, expanding our international coverage, and preparing technical, historical, and educational content that will help operators continue learning and enjoying ham radio from a variety of perspectives.

Our commitment remains the same as it was with our very first issue: to create a magazine made by hams, for hams one that celebrates both the latest technological innovations and the personal stories that make this hobby truly unique.

We extend our sincere thanks to every reader, contributor, photographer, author, and advertiser who helps make this publication possible. Your continued support allows us to grow with each new issue and inspires us to keep raising the quality of everything we do.

Enjoy the summer. Get involved with your local club's activities, take your radio into the field, try a new antenna, introduce someone to the world of ham radio, and above all, keep the passion for communication alive.

There are exciting months ahead, and SWR Magazine will be here to share every step of the journey.

We'll catch you on the air and in the next issue!



With Venezuela and the YV Community

SWR Magazine expresses its solidarity with the Venezuelan people, with the families affected by the recent earthquakes and with our fellow YV amateur radio operators.



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SWR Magazine has grown through something more powerful than paid advertising: the amateur radio community. We do not invest in advertising platforms to reach new readers. Since the beginning, our growth has been organic, steady, and driven by readers, subscribers, clubs, friends, and operators who believe in sharing good content. If you enjoy SWR Magazine, please share it with another amateur radio operator, your club, your friends, or someone just discovering the hobby. Every share helps us reach new readers around the world.

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WORLD NEWS

WRTC 2026 Introduces Live Real-Time Tracking

The World Radiosport Team Championship (WRTC) 2026 will debut a new real-time tracking platform developed in partnership with the World Radio League (WRL). The system will allow fans and participants to follow the competition as it unfolds, featuring live leaderboards, continuously updated statistics, and dedicated profile pages for each competing team.

Operators and spectators will also be able to view detailed information about completed QSOs, including the bands and operating modes used, making the event more engaging and interactive for everyone following the competition. The initiative is designed to modernize competitive ham radio and bring the excitement of radiosport to a broader global audience.

Ham Radio Operators Activate Emergency Communications Following Earthquake in Venezuela



Following the devastating earthquake that struck Venezuela on June 25, the international ham radio community responded immediately to support emergency communications efforts. At the request of the Radio Club Venezolano and the International Amateur Radio Union (IARU), operators throughout the Americas and around the world were asked to keep 7.135 MHz in the 40-meter band clear for emergency traffic. According to Domingo L. Hernández Lima (YV5IZE), Director of the National Emergency Network of the Radio Club Venezolano, large areas of Caracas were left without electrical power, while conventional communications infrastructure suffered severe disruptions. Thanks to amateur radio, emergency communication links were quickly established using battery-powered equipment, along with HF and digital-mode networks that supported coordination among emergency response teams. The situation once again demonstrated the vital role of ham radio when traditional communications systems fail. Amateur radio operators from several countries across the region remained on standby to provide additional support if needed, reaffirming the Amateur Radio Service's longstanding commitment to emergency communications and public service.

Source: IARU



WORLD NEWS

Global Ham Radio Activity on the Rise

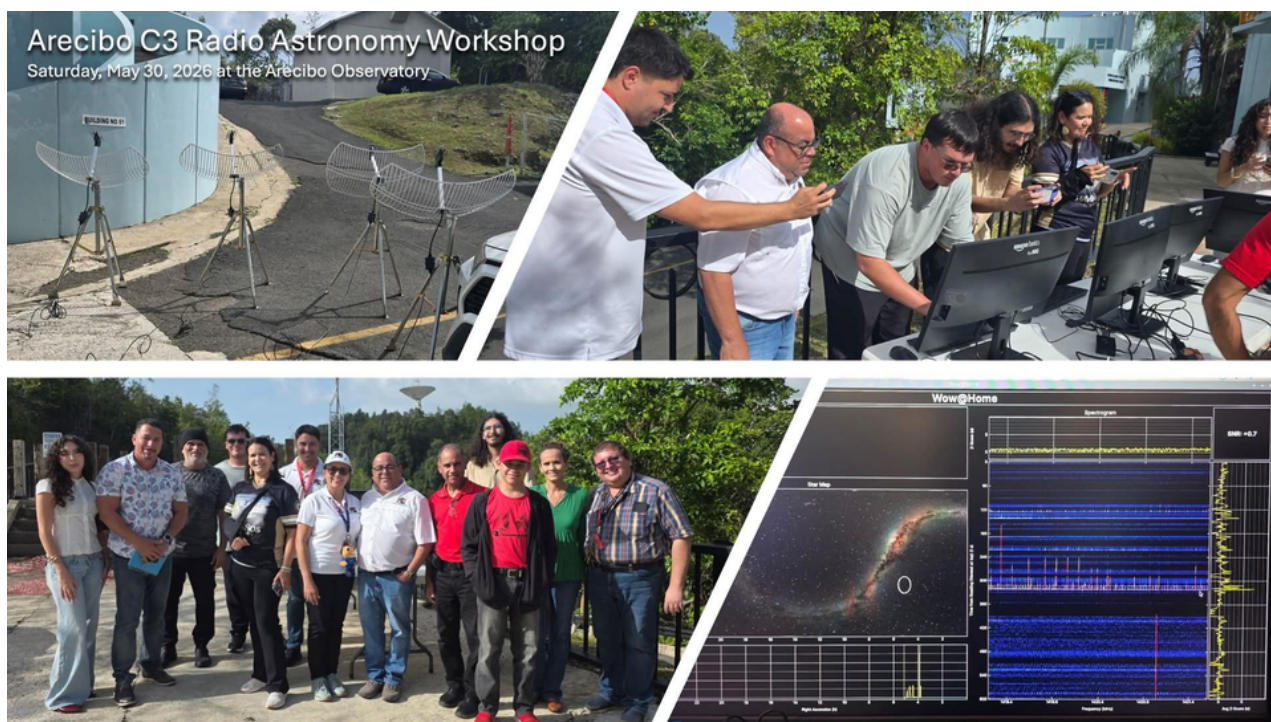


Throughout 2026, the international ham radio community continues to stay highly active, with several special events on the HF bands bringing operators together from around the world during the summer season. One of the most anticipated is the 13 Colonies Special Event, held annually from July 1-7 in the United States. During the event, special event stations represent the original Thirteen Colonies, giving participants the opportunity to work each station and earn the coveted Clean Sweep award. Other commemorative and themed on-the-air events are also taking place throughout the season, celebrating milestones in telecommunications history as well as sporting and cultural events that encourage worldwide participation. Together, these operations showcase the vitality of modern ham radio, strengthening the international amateur radio community and fostering connections among operators through events that blend history, culture, and the spirit of communication.

Prototype Telescope Achieves New Milestone in Radio Astronomy

In 2026, radio astronomy took a significant step forward with the successful initial testing of a next-generation prototype radio telescope developed by the National Radio Astronomy Observatory (NRAO). The prototype marks an important milestone in the ongoing effort to explore the universe with greater precision. The system is part of a long-term project that envisions a future array of 244 antennas spread across more than 8,000 kilometers, dramatically increasing both the sensitivity and angular resolution of radio observations. During its first tests in New Mexico, the prototype operated alongside the Very Large Array (VLA), observing well-known targets including the Crab Nebula, the Sun, and the active galactic nucleus Perseus A. This achievement represents an important transition toward a more capable and fully integrated observing system, further strengthening the role of radio astronomy in expanding our understanding of the deep universe.





When Ham Radio Reaches the Stars

MY EXPERIENCE AT ARECIBO WOW!

By: Jose M. Candelaria NP4ET

There are experiences that don't simply leave lasting memories they reshape the way we understand our own passion. Arecibo Wow!, a workshop I attended with my daughter, was one of those experiences.

Returning to the former facilities of the Arecibo Observatory is far more than visiting a historic landmark. It is stepping into a place where humanity literally listened to the universe for decades. It was here that the legendary 305-meter radio telescope stood an engineering marvel that revolutionized radio astronomy and placed Puerto Rico at the forefront of scientific discovery.

Being there, surrounded by such an extraordinary scientific legacy while participating in a workshop led by Dr. Abel Méndez, was a truly meaningful experience. The Arecibo Wow! project is much more than an initiative to analyze historical radio astronomy data. It is an invitation to rethink how we listen to the cosmos, including mysteries such as the famous Wow! Signal, one of the most intriguing detections in the history of radio astronomy.

As a ham radio operator, you learn early on to work with the fundamentals: weak signals, background noise, ionospheric propagation, signal loss, interference, antennas, and impedance matching. Although it is often viewed as a technical hobby, ham radio is, in reality, a practical application of physics. Every time we tune an antenna, analyze propagation conditions, or try to improve a weak signal, we are working with the very same principles that govern far more complex scientific systems.

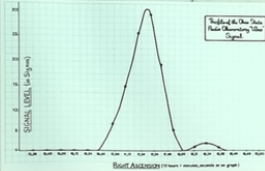
- **Receiving Weak Signals**

- **Processing Noise**

- **Interpreting the Signal**

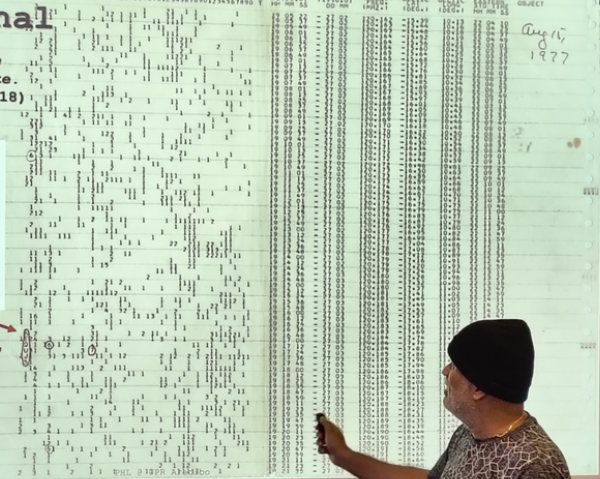
The Wow! Signal

The most famous and credible
SETI candidate signal to date.
- Wright (2018)



Reproduction of the Ohio State
Pulse Observatory 'Wow' Signal

- Strong detection - 30 SNR
- Narrowband - 10 kHz
- Hydrogen-line frequency - 1420 MHz
- Expected shape - beam pattern
- No confirmed RFI or natural origin
- SETI survey - Ohio SETI program



Aug 15, 1977

Arecibo Wow! and the Continuity of Scientific Knowledge

The workshop led by Dr. Abel Méndez highlighted something that is not often emphasized enough: modern radio astronomy is built upon many of the same fundamental concepts that also underpin ham radio. The Arecibo Wow! project seeks to reanalyze historical data using modern tools in search of transient signals and phenomena that are still not fully understood. In that process, concepts familiar to every ham radio operator, including thermal noise, bandwidth, system sensitivity, and signal-to-noise ratio, become essential components of scientific analysis. Being there, immersed in that environment, allowed me to see more clearly than ever that ham radio can serve as a genuine gateway to science. Not as a metaphor, but as a practical foundation for developing scientific thinking.



Educational Value Across Generations

Watching my daughter, a physics student, take part in this experience added an even deeper dimension to the day. Ham radio was no longer just a personal hobby. It became a bridge connecting generations through science.

As we examined spectra, explored scientific concepts, and discussed radio signals, one thing became unmistakably clear: a passion for science is not only taught, it is experienced. Ham radio is one of the few activities where that learning happens naturally through hands-on practice, curiosity, and continuous discovery.



In my own case, as an astronomy teacher and an active ham radio operator, I have seen firsthand how these two worlds complement one another. Teaching astronomy without practical experience in radio signals leaves an important piece of the picture missing. Likewise, practicing ham radio without understanding the physics behind what happens in the ionosphere and beyond means missing much of what makes the hobby so fascinating.

Building the Bridge Between Ham Radio and Science

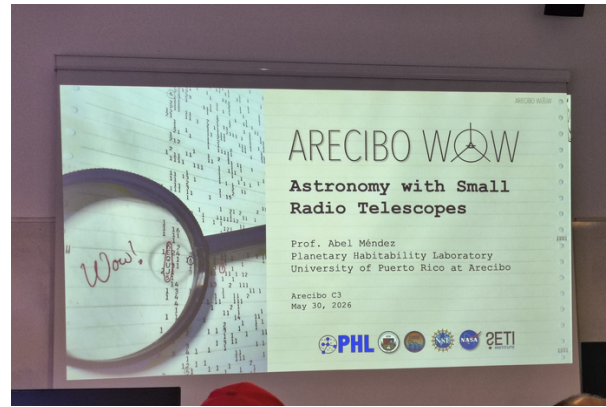
One of the most important lessons I took away from this workshop is that the connection between ham radio and fields such as astronomy and radio astronomy is not merely theoretical. It is built through meaningful, real-world experiences. That bridge can be developed in many ways:

- Experimenting with antennas and taking real-world measurements: Measuring, tuning, comparing, and documenting results turns ham radio into a practical physics laboratory.
- Systematic observation of radio propagation: Understanding the ionosphere not merely as a theoretical concept, but as a dynamic system that directly affects our communications.
- Using signal analysis software: Spectrum displays, waterfall displays, and digital signal analysis bring the amateur radio operator closer to the tools used in modern scientific research.
- Participating in radio science projects: From satellite monitoring to amateur radio astronomy projects, there are countless opportunities to contribute while expanding both technical knowledge and scientific understanding.

- Collaboration across generations and disciplines: Physics students, engineers, educators, and ham radio operators all share the same fundamental technical language, even though they apply it in different contexts.



When these elements come together, ham radio becomes much more than a technical hobby. It becomes an accessible and engaging form of experimental science.



Arecibo as a Symbol

The Arecibo Observatory remains far more than a physical structure. It stands as a symbol of what can be achieved when human curiosity is transformed into engineering and scientific discovery. Although its iconic radio telescope is no longer in operation, its legacy lives on through projects like Arecibo Wow! and through everyone who understands that a radio signal can be a window into the universe.

I left that workshop with a renewed sense of certainty: ham radio is not separate from modern science. It is an integral part of it.

Perhaps most importantly, ham radio remains one of the most accessible ways we have to teach people how to listen to the universe.





Mastering AliExpress for Ham Radio Gear

Part 1: What to Buy, What to Avoid, and How to Buy Smarter

By Mark Rosneck, KB0US

I admit it. I have an addiction problem with AliExpress.

There is something about having those white envelopes show up with all sorts of cool stuff I probably did not really need. But I save a lot of money on that stuff, so I think it works out.

AliExpress is the retail side of Alibaba, the Chinese global business-to-business marketplace for wholesalers, manufacturers, suppliers, and importers. For most buyers, AliExpress feels somewhat similar to the Buy It Now side of eBay. In fact, it is highly likely that a supplier you find on AliExpress may also be selling the exact same item on eBay.

There are millions of items on AliExpress. If you cannot find something there, you are probably not looking hard enough. Whether it is a good price from a reputable vendor is another matter entirely.

And that is where the real learning begins.

“The secret is not simply finding the lowest price. The secret is knowing what makes sense to buy there.”

Understanding AliExpress Choice

In 2023, AliExpress introduced its Choice service, which feels a bit like Amazon Prime. Products listed as Choice usually reach customers in the United States in about 7 to 15 days...

Understanding AliExpress Choice

In 2023, AliExpress introduced its Choice service, which feels a bit like Amazon Prime. Products listed as Choice usually reach customers in the United States in about 7 to 15 days, often from a local or regional warehouse rather than directly from China. Choice items typically include free shipping when your purchase reaches a minimum order amount, and returns are generally easier.

In my experience, Choice items also tend to offer a more reliable buying experience. That does not mean every Choice item is automatically perfect, but it is one of the first things I look for when comparing options.



Smart Buyer Tip

- Check seller feedback
- Look at orders in the last 6 months
- Review response rate
- Read customer reviews
- See whether the item is listed under Choice

Who Are the Sellers?

Just like eBay, or some random website you find when searching for an item, an AliExpress seller can be someone selling out of an apartment, or it might be a large operation with hundreds of employees.

There is no easy way to know. Do they actually have the item in their possession for you to buy? Again, there is no easy way to know.

AliExpress does provide seller metrics that are similar to what you might see on eBay. These can help you make a better decision before buying.



Guanxi and Why It Matters

In China, there is a culture of cooperation between companies called Guanxi, pronounced Gwan-shee. Guanxi refers to the system of personal relationships, networks, and mutual obligations that are central to Chinese business and social life.

What this means for buyers is that an item you see in one AliExpress store might actually be sold or supplied by someone completely different. If you buy that item, it may be drop shipped directly from another company.

If the item is out of stock, your order may be canceled or backordered, which can create communication and return issues.

What I Buy

Here are the categories where AliExpress consistently delivers the best value for ham radio and electronics projects.



Test Equipment

I purchased a very low-end 100 MHz oscilloscope for simple is there a signal there kind of testing. I also found an inexpensive infrared thermometer that comes in handy for repairs. I have a digital clamp meter for safely working around high AC currents, and I have purchased a collection of test leads, including some with banana plugs.



Ham Radio Accessories

I have purchased an antenna splitter, a stainless steel key, a dummy load, and a 30 amp 13.8 VDC switching power supply. I have also needed cables for some Baofeng radios and a Yaesu handheld. I found a charger for a Yaesu handheld, as well as a handheld microphone that worked well.



Tools

I have found a number of useful tools, including screwdrivers, T-handle wrench sets, anti-static tweezers, wire cutters, and wire strippers.



Components

AliExpress can also be useful for components. I have purchased chip resistors, collections of electrolytic capacitors, strip LEDs, and collections of discrete LEDs.



Soldering Supplies

I have bought solder, soldering mats, soldering aids, solder wick, a solder suction pump, and soldering irons. My favorite purchase in this category is a soldering station that fits my DeWalt batteries.



Wire and Heat Shrink

I have bought a lot of hookup wire, a wire-wrap tool, speaker audio wire for a project, red and black power wire, and several kits of various sizes of heat shrink tubing.



Computer Bits and Pieces

USB drives, USB cables, phone chargers, and a cooling fan for a Raspberry Pi are all examples of small computer-related items I have purchased.



Battery Welding and Battery Projects

I have also purchased items related to battery projects, including a battery welder, nickel strips, and cases for building 12 volt lithium-ion batteries.

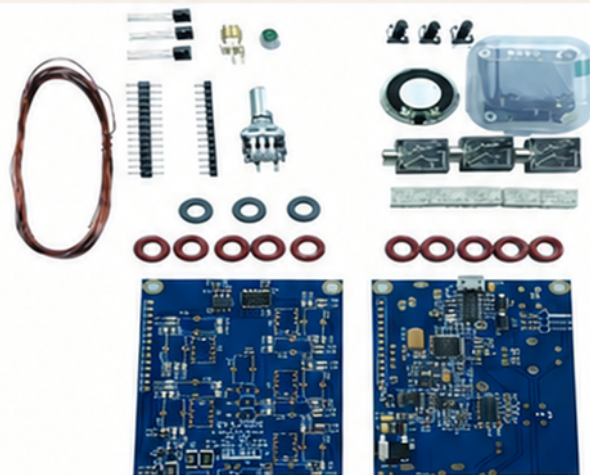


Hardware

I have found a number of kits of nuts, bolts, and screws, especially small metric stainless hardware.

Good AliExpress Categories

- small tools
- components
- soldering supplies
- wire
- hardware
- basic accessories



What I Tend Not to Buy

Use Caution

- Japanese radios
- Coax connectors
- High-value gear
- Too-cheap items



There are some categories I generally avoid buying online from AliExpress. I do not buy Japanese radios there; I prefer to get them from established dealers. I also avoid buying coax or coax connectors. Sometimes the small price saving is not worth the risk when it comes to high-value gear or anything that seems suspiciously cheap.

Final Thoughts for Part 1

AliExpress can be a useful resource for amateur radio operators, experimenters, and builders. It can also be confusing, inconsistent and risky if you don't understand how the marketplace works. The secret isn't just finding the lowest price; it's knowing what makes sense to buy there.

AliExpress can be fun and useful. Sometimes you save money by accepting a little more risk. Sometimes the more interesting benefit is the ability to find items that are difficult to source anywhere else. But the platform rewards careful buyers, not careless ones.

Coming in August

Mastering AliExpress for Ham Radio Gear: Part 2
Fakes, Traps, Tariffs, and Real-World Buying Strategy

DXpeditions

DXpeditions are far more than simple on-the-air operations. They are a reminder that human curiosity knows no boundaries. From a remote corner of the world, a single callsign can connect stations separated by oceans, languages, and cultures, proving that when technology is driven by passion, it becomes an invisible bridge between people.



01.

FP/KV1J Miquelon Island

Eric, FP/KV1J, will once again be active from Miquelon Island (IOTA NA-032) from June 27 through July 14, 2026.

He will be operating on the 80 through 6 meter bands using SSB, CW, RTTY, and FT8.

QSL via his home call or Logbook of The World (LoTW).

Serving as the last remaining vestige of the former colonial empire of New France, Saint Pierre and Miquelon is a French overseas territory located in the northwestern Atlantic, much closer to Canada than to mainland France.

The islands hold considerable historical and strategic significance, and their name is well known throughout the world. They are situated at the entrance to Fortune Bay, along the southern coast of Newfoundland, near the Grand Banks. The archipelago lies approximately 3,819 kilometers (2,373 miles) from Brest, France, yet is only 24 kilometers (15 miles) from

Canada's Burin Peninsula. This remarkable proximity makes Saint Pierre and Miquelon France's only territorial foothold in North America.





02

February 22 marks Argentine Antarctica Day, commemorating the nation's long-standing presence on the continent and the beginning of its scientific operations there. On this day in 1904, Orcadas Base was officially established in the South Orkney Islands, becoming Argentina's first permanent station in Antarctica.

Since then, Argentina has maintained a continuous presence through its Antarctic bases, playing an active role in scientific research and exploration across the continent.

03

The Isle of Man is located in the Irish Sea, between England, Scotland, Ireland, and Wales. It is a self-governing British Crown Dependency.

The island covers approximately 570 square kilometers (220 square miles) and has a population of about 84,000, with most residents living in the capital city of Douglas.

The island's traditional language is Manx, an ancient Celtic language that has experienced a successful revival in recent

years. Rather than relying on heavy industry, the Isle of Man's economy is driven primarily by two sectors: international financial services, supported by its favorable offshore tax environment, and tourism, which continues to make a significant contribution to the island's economy.

02.

LU1ZA Isla Laurie

Ramón, LUI DMZ, is currently active as LU1ZA from Orcadas Naval Detachment on Laurie Island, South Orkney Islands (IOTA AN-008).

He plans to remain active through the end of 2026.

Recent DX Spots: LU1ZA

Grid Square: GC79pg

03.

MD7C Isle of Man

Rich, M5RIC, will be active as MD7C from the Isle of Man (IOTA EU-116) during the RSGB IOTA Contest, July 25-26, 2026.

He will compete in the Single Operator, SSB, 24-Hour category.

Recent DX Spots: MD7C

MD7C Log Search: Available

QSL via: M0OXO





The Journey of a Signal

The 0.2 Seconds That Change the World

The extraordinary journey of a ham radio transmission, from the microphone to the other side of the world.

Photo by: ocregister.com

""CQ CQ CQ, this is K6D..."

It all begins with just a few words.

To the operator, it feels like only a few seconds. They press the PTT (Push-to-Talk) button, speak into the microphone, and wait for a reply. It is such a routine action that we rarely stop to consider the remarkable chain \

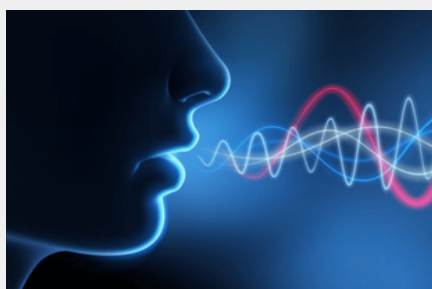
of physical and electronic processes taking place in that brief moment.

In less than two-tenths of a second, the simple vibration of the vocal cords begins a journey that can span thousands of kilometers at the speed of light, reflect from layers of the atmosphere hundreds of

kilometers above the Earth, and ultimately be heard by another ham radio operator on the other side of the ocean.

What we casually call a QSO is, in reality, one of the most fascinating demonstrations of applied physics.

[Join us on this journey.](#)



1. It All Begins with Your Voice

The first key player is not the radio.

It's you. When you speak, your vocal cords cause the air around them to vibrate. Every word creates tiny pressure variations that travel as sound waves.

These waves have unique characteristics: frequency, amplitude, intensity, and timbre. Together, these qualities make your voice unlike anyone else's in the world. But a radio cannot understand sound waves.

It needs electricity.



2. The Microphone: The First Translator

This is where one of the most important components in the system comes into play.

The microphone converts the vibrations of the air into an electrical signal.

Depending on the type of microphone, whether dynamic, electret, or condenser, the underlying physics may differ, but the result is the same:

A nearly perfect electrical representation of your voice.

Now the information is ready to travel through the transceiver.



3. The Audio Processor

Before the signal is transmitted, many modern transceivers process the audio in several ways.

These may include equalization, compression, limiting, noise reduction, and DSP (Digital Signal Processing). The goal is to improve intelligibility without necessarily increasing the transmitter's output power.

A well-processed voice signal can often be much easier to understand than one transmitted at a much higher power level.

In ham radio, clarity is often more valuable than watts.



4. The Magic of Modulation

Up to this point, we have only an audio signal.

But sound waves alone cannot travel thousands of kilometers.

They need to be carried by a radio wave.

That process is known as modulation.

Depending on the operating mode, the information alters different characteristics of the carrier wave: amplitude (AM), frequency (FM), phase (digital modes), or sideband (SSB).

Modulation is one of the greatest innovations in the history of telecommunications.

Without it, radio as we know it simply would not exist.



5. The Oscillator: Where the Carrier Is Born

While you're speaking, another component is quietly at work. The oscillator generates an extremely stable radio frequency signal. For example:

- 14.074 MHz
- 7.200 MHz
- 28.400 MHz

That frequency becomes the carrier that transports your voice.

In modern transceivers, this level of stability is achieved using crystal oscillators, PLL (Phase-Locked Loop) synthesizers, or, in high-precision equipment, GPS-disciplined frequency references.



6. The Power Amplifier: Giving Your Signal the Strength to Travel

Once the signal has been modulated, it still contains very little power.

That is when the power amplifier takes over.

Its job is to increase the signal's strength without altering the information it carries.

Depending on the station, the transmitter may deliver 100 watts, 500 watts, or even more where permitted by license regulations.

However, power alone never guarantees a successful contact.

A well-designed, efficient antenna will often produce better results than simply doubling the transmitter's output power.



7. The Coaxial Cable: The Invisible Highway

The RF energy leaves the transmitter and enters the coaxial cable.

Although it may look like an ordinary cable, it is actually a carefully engineered transmission line designed to carry radio frequency energy with as little loss as possible.

Every foot, or every meter, matters.

Poor-quality coaxial cable can waste a significant portion of your transmitter's power before the signal ever reaches the antenna.



8. The Antenna: Where the Real Magic Happens

This is where something truly extraordinary happens.

Electrons accelerate and decelerate millions of times every second.

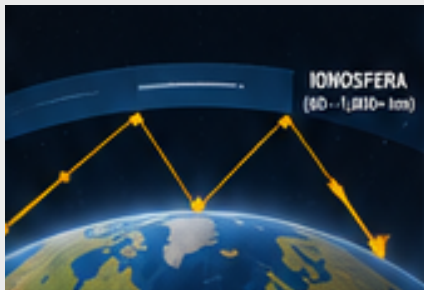
Their motion generates changing electric and magnetic fields.

These two fields sustain one another and eventually detach from the antenna.

At that moment, an electromagnetic wave is born.

It no longer needs wires.

Now it is free to travel through space.



9. The Encounter with the Ionosphere

If you're operating on the HF bands, one of the most fascinating parts of the journey begins.

The signal rises toward the ionosphere.

This region of the atmosphere, extending from roughly 60 kilometers to more than 1,000 kilometers (about 37 to 620 miles) above the Earth's surface, is ionized by solar radiation and acts as a giant partial reflector for certain radio frequencies.

Depending on factors such as the time of day, season, solar cycle, geomagnetic activity, and the operating frequency, the signal may return to Earth hundreds or even thousands of kilometers away.

This phenomenon, known as ionospheric propagation, is what allows even a modest ham radio station to make contacts across continents.



10. Hopping Around the Planet

Sometimes the signal does not make just a single bounce.

It can reflect multiple times between the ionosphere and the Earth's surface.

Each reflection is known as a hop.

After several successive hops, a signal can travel across North and South America, Europe, Africa, Asia, and Oceania, all while using only a few hundred watts of transmitter power.

It is one of the reasons why ham radio remains so fascinating, even in the age of the Internet.



11. It All Happened in Just a Few Tenths of a Second

By the time you release the PTT button, millions of physical processes have already taken place, almost simultaneously.

Electrons accelerating.

Crystal oscillators vibrating millions of times per second.

Power amplifiers delivering RF energy.

Electromagnetic fields propagating through space.

Ionized layers of the atmosphere reflecting that energy.

Electronic circuits reconstructing your voice.

All so that another operator, perhaps thousands of miles away, can hear you clearly.



More Than Technology

Ham radio is about far more than sophisticated equipment or towering antennas.

Every transmission brings together multiple disciplines: physics, electronics, mathematics, engineering, space weather, radio propagation, computer science, and human creativity.

Above all, it demonstrates that a simple conversation can travel around the world without relying on cables, fiber-optic networks, or commercial satellites. Every time you press the PTT button, you take part in an extraordinary scientific process that combines more than a century of innovation with the fundamental laws of nature. The next time you hear a faint "CQ" rising out of the band noise, remember that behind those two letters lies an invisible journey, one that began with the vibration of a human voice and ended by connecting two people separated by thousands of miles.

Because in the end, ham radio does more than transmit signals.

It carries knowledge, friendship, and the excitement of discovering that, in just 0.2 seconds, the entire world can be within reach of your voice.

Photo by: beaumontenterprise.com

SUMMER IN HAM RADIO

WHEN THE SUN OPENS THE BANDS

Summer doesn't just change the weather. It also transforms the way the radio spectrum behaves.

For the ham radio operator, these months offer a unique opportunity. The bands become more dynamic, ionospheric openings become more frequent and widespread, and outdoor operating provides the perfect setting to experiment, learn, and enjoy ham radio in its purest form.

By the SWR Magazine Editorial Team

Photo by: oherrala.medium.com



DYNAMIC PROPAGATION

Unexpected band openings create great summer DX opportunities.



OUTDOOR OPERATIONS

Parks, beaches, and mountaintops become ideal portable operating locations.



EXPERIMENT AND LEARN

Summer is the perfect time to test antennas, improve your station, and take on new projects.



A COMMUNITY THAT NEVER STOPS

Events, Field Days, and club activities strengthen the spirit of the ham radio community.

Summer Propagation

When the Ionosphere Becomes Unpredictable

During the summer, increased solar radiation makes the ionosphere more dynamic, directly affecting HF propagation. Bands such as 10, 12, and 15 meters can open unexpectedly, creating excellent opportunities for long-distance DX contacts at unusual times of the day.

It's the perfect season to keep your station on the air and your antenna ready. Summer is also an excellent time to explore digital modes such as FT8 and JS8Call, where even weak signals can lead to reliable worldwide contacts.



Photo by: sarts.org

BANDS THAT SHINE DURING THE SUMMER

10 METERS	Excellent openings to Europe, South America, and Asia.
12 METERS	Excellent for daytime DX.
15 METERS	Reliable for regional and DX communications.
20 METERS	Reliable at any time.

Recommended Digital Modes

FT8

Ideal for taking advantage of short band openings and weak signals.

JS8Call

Reliable communication with minimal bandwidth.

Outdoor Operating

Taking Ham Radio Beyond the Shack

Summer is the perfect time to get out and operate portable. Parks, beaches, mountaintops, and nature preserves become temporary ham radio stations.

Operating from a beach at sunset or a mountaintop overlooking the ocean adds a unique dimension to the hobby. Summer is also peak season for programs like POTA (Parks on the Air) and SOTA (Summits on the Air), encouraging exploration while making contacts with operators around the world.



Photo by: WiMo

Summer as Your Classroom

Experiment Without Fear

Summer also brings the ham radio community together. Club meetings, Field Days, workshops, and outdoor operating events become more frequent throughout the season.

Organizations such as the American Radio Relay League (ARRL) promote field exercises and educational activities, while the International Amateur Radio Union (IARU) continues to strengthen cooperation among amateur radio operators worldwide, proving that ham radio truly knows no borders.



Photo by: Wikipedia

Community Activity

The Ham Spirit Never Takes a Break

Summer is the perfect time to experience ham radio in new ways. Whether you're participating in Field Days, portable activations, or gathering with fellow operators, the season encourages learning, camaraderie, and the spirit of service.

No matter where you operate from, ham radio continues to prove that borders disappear when a signal reaches its destination.

73, and have a great summer on the air!



Photo by: onallbands



Walking Among Giants

A Ham Radio Activation Among Colorado's Mountain Trolls

Ham radio has a unique way of taking us to unexpected places. Sometimes the destination is a mountaintop for a SOTA activation, a beach for an oceanfront operating session, or a park for a day of portable radio.

This time, however, a remarkable combination of art, nature, and ham radio brought me to the mountains of Colorado, where I had the chance to visit one of the most extraordinary sculptures I have seen in recent years.

For some time now, I have followed the work of Danish artist Thomas Dambo, who is internationally known for his giant troll sculptures built from recycled materials. His creations can be found in several countries and have become popular destinations for hikers, photographers, and lovers of outdoor art. Dambo has installed numerous sculptures around the world, including ten across the United States. Each troll has its own personality and backstory, making every visit a unique experience. When the artist unveiled a new sculpture in the small town of Victor, Colorado, I knew it was the perfect opportunity to combine a scenic hike with a portable ham radio activation.

Meeting Rita, the Rock Planter

The new sculpture is called "Rita, the Rock Planter." This impressive figure stands approximately 13 feet (4 meters) tall and measures nearly 20 feet (6 meters) in length.

The scene is particularly compelling. Rita is depicted kneeling beside an old mining excavation, carefully pushing a large pile of rocks back into the pit. The artwork conveys a powerful message of environmental restoration and landscape recovery, reminding visitors of the importance of giving something back to nature after years of mining and resource extraction.

Her hair, crafted from tree branches, her enormous wooden hands, and her warm, friendly expression give her the appearance of having stepped directly out of a Scandinavian legend. Despite her



imposing size, she conveys a remarkable sense of peace, protection, and quiet strength.

A Place Rich in History

The sculpture is located just west of Victor, Colorado, in an area dedicated to exhibits highlighting the region's historic mining heritage. The surrounding landscape still preserves many reminders of the gold rush that transformed these mountains during the nineteenth century.

One of the site's most notable features is the historic headframe from the American Eagles Mine, which was relocated here to help preserve an important part of Colorado's industrial heritage. As you walk through the area,

it is easy to imagine the bustling mining activity that once defined these mountains.

Today, however, the landscape tells a very different story. Visitors are greeted by peaceful hiking trails, breathtaking mountain views, and now, watching quietly over the valley, a giant wooden guardian that seems perfectly at home among the pines.

A Hike with Ham Radio

Naturally, I couldn't pass up the opportunity to bring along a portable ham radio station.

For this adventure, my setup consisted of a transceiver mounted in a military backpack, powered to operate at approximately 50 watts on the 20-meter band. My antenna was a 10-foot vertical whip, a simple yet highly effective configuration for portable field operations.

The trail leading to Rita is relatively short and easy to follow. In fact, the only real obstacle worth mentioning was a tree that decided it wanted to keep my antenna as I made my way up the trail. Anyone who has ever operated portable will immediately understand that experience.

One of the most striking aspects of the location is its elevation. The site sits at approximately 9,800 feet (nearly 3,000 meters) above sea level. At that altitude, the air is noticeably thinner than at sea level, turning what appears to be an easy walk into a much more demanding hike than expected.

Joking aside, it almost feels as though an oxygen bottle should be included as part of your portable ham radio gear.



Art, Nature, and Ham Radio

This experience is a perfect reminder that portable ham radio is about much more than making contacts. Combining a hike with a visit to a one-of-a-kind work of art made it possible to enjoy the outdoors, explore the region's rich mining history, and operate from an unforgettable location. Thomas Dambo's troll sculptures encourage visitors to discover places they might never have found otherwise, making them outstanding destinations for future portable ham radio activations.

If your travels take you to Colorado, consider adding the trolls in Victor and Breckenridge to your itinerary. Besides being remarkable works of art, they provide the perfect excuse to pack your radio, enjoy the outdoors, and create memories that will last a lifetime.

73 and good DX,
Paul WORW



By the SWR Magazine Editorial Team



X-026

ICOM X-026

**The Spiritual Successor to the
IC-7100 and the Future of Mobile
Ham Radio?**

at HAMRADIO, June 26-29

The X-026 Could Become the Long-Awaited Successor to the IC-7100



There are certain transceivers in ham radio that define an era. The IC-706 revolutionized mobile HF/VHF/UHF operating. The IC-7000 took the concept to the next level. Later, the IC-7100 introduced an innovative angled touchscreen control head and a remote front-panel design. Yet more than a decade has passed since its release, leaving many amateur radio operators wondering when Icom would unveil a true successor.

That answer may finally be taking shape under a mysterious name: X-026.

Unveiled as a concept mock-up at Dayton Hamvention 2026, the X-026 quickly became one of the most talked-about topics in the worldwide ham radio community. While Icom has kept most of the technical details under wraps, the clues revealed so far suggest that it could become one of the most significant amateur radio product launches of the decade.

The X-026 could mark the beginning of a new generation of SDR mobile transceivers.

A Project Wrapped in Mystery

Icom officially unveiled the X-026 at Dayton Hamvention 2026 as a development concept rather than a finished product. The company has been extremely careful not to disclose final specifications, pricing, or an official release date.

This is not the first time Icom has followed this strategy. A similar approach was used with the so-called Project X60, which eventually evolved into the highly successful IC-7760. For that reason, many observers believe the X-026 is already well into the development process and that its public debut is intended to gauge feedback from the amateur radio community before the final version is announced.

Which Transceiver Is It Designed to Replace?

Although Icom has not officially confirmed where the X-026 will fit within its product lineup, most industry

observers agree that it is aimed squarely at the market segment long occupied by the IC-7100.

There is currently a significant gap in Icom's product lineup.

- The IC-705 is a portable QRP transceiver.
- The IC-7300 is designed primarily for fixed-station operation.
- The IC-7760 occupies the high-end premium performance category.
- The IC-7100 has gone more than a decade without a major update.

Between these models, there is ample room for a modern mobile transceiver covering HF, 6 meters, VHF, and UHF while incorporating today's SDR technology.

That is precisely where many industry observers believe the X-026 will fit.



What We Know So Far

Based on promotional videos, photographs of the concept mock-up, and observations made during Dayton Hamvention, several interesting features have begun to emerge.

1. Remote Control Head

Everything points to a split architecture, with the RF unit separated from the control head.

This design greatly simplifies mobile installations in today's vehicles, where space for radio equipment is increasingly limited.

2. Possible Wireless Connectivity

One of the most talked-about possibilities is wireless communication between the main RF unit and the control head.

Although Icom has not confirmed this feature, several industry observers believe the promotional videos strongly hint in that direction. If confirmed, it would represent a significant innovation in mobile amateur radio.

3. Multiple Antenna Connections

Preliminary images appear to show more than one antenna connector.

This could provide seamless integration of HF, VHF, and UHF operation without the need for external antenna switches.

4. A Modern User Interface

The control head features a large central display surrounded by multiple physical controls.

Icom appears to be striking a balance between a modern touchscreen interface and the intuitive operation provided by dedicated knobs and buttons, an approach especially valued by operators using the radio in mobile environments.

What We Will Probably See

Based on Icom's technological evolution over the past several years, it is reasonable to expect that the X-026 could incorporate features such as:

- Next-generation SDR architecture.
- High-resolution touchscreen display.
- Real-time spectrum scope.
- Advanced waterfall display.
- Built-in D-STAR.
- Bluetooth connectivity.
- Wi-Fi support.
- Remote control from mobile devices.
- Integrated audio recording.
- APRS capability.
- Internet-based firmware updates.

These features would fit perfectly with the technological direction seen in recent Icom models such as the IC-705, IC-905, and ID-5200.



When Will It Be Officially Announced?

The most consistent information released by Icom indicates that the final specifications, official product name, and additional details will be unveiled at Tokyo Ham Fair 2026.

The event is scheduled for August 29-30, 2026, in Tokyo, Japan.

If Icom follows its usual development timeline, the X-026 could reach the market sometime between late 2026 and early 2027.

What It Could Mean for Ham Radio

Beyond its specifications, the X-026's greatest significance may lie in what it represents.

In recent years, activities such as:

- POTA (Parks on the Air)
- SOTA (Summits on the Air)
- Mobile operating
- Emergency communications
- Portable expeditions

have experienced remarkable growth. Yet the market for all-mode mobile transceivers has not evolved at the same pace.

If the X-026 delivers a combination of:

- Full-power operation
- Advanced mobile capabilities
- Modern SDR technology
- Flexible remote control
- Integrated digital features

it could become the new benchmark for the next generation of amateur radio operators.

The Transceiver Many Operators Have Been Waiting For

The IC-706 defined a generation.

The IC-7000 refined the concept.

The IC-7100 introduced innovative ideas that are still admired today.

Now, the X-026 appears poised to carry that legacy into the modern era.

For now, many questions remain unanswered. One thing is certain, however: Icom would not have generated this level of anticipation without having something truly significant in the works. The worldwide amateur radio community will be watching closely as Tokyo Ham Fair 2026 approaches.

And if the rumors prove to be true, we may be witnessing the birth of the next great classic in amateur radio.

73 and good DX.

Author's Note:

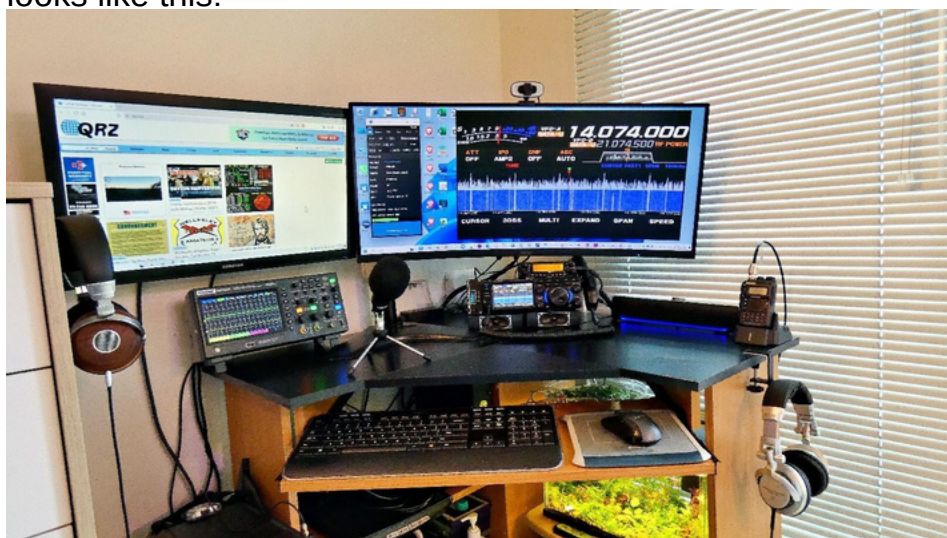
At the time this article was written, Icom had not released any official specifications for the X-026. All technical information currently available is based on observations made during Dayton Hamvention 2026, official promotional material, and analysis from the international amateur radio community. Most of the images included in this article are concept renderings, artistic recreations, or community-generated interpretations based on publicly available information about the X-026 project. These images do not necessarily represent the final product design and are not affiliated with, endorsed by, or approved by Icom Inc. They are presented solely for informational and conceptual illustration purposes.

By: VE7LCG, Daniel Romila

Knock on Wood

Headphones with Wooden Ear Cups

» I am an Advanced-licensed amateur radio operator, the highest amateur radio license class available in Canada, so I have a corner desk with a few transceivers and handheld radios that I use for my ham radio activities. It's a modest setup, but it looks like this:



Many of the items in the photo above were gifts, sometimes from people whose identities I never even learned. Even so, among all the equipment shown, what do you think stands out the most? The headphones hanging to the left of my corner desk, the open back model with the beautiful wooden ear cups. I got them for what was practically a gift. I spotted them on Facebook Marketplace, knew exactly what they were, and the seller was asking only CAD \$10.

I contacted the seller, a kind Korean Ph.D. student at the University of British Columbia (UBC) in Vancouver, Canada. Believe it or not, I told him I wanted the headphones, but I also explained that they had been listed for several weeks and that a new pair of that model, complete with the carrying case and cable as his were, was worth far more than CAD \$10. I suggested that he might want to reconsider and either keep them or sell them for a higher price.

But he genuinely wanted to get rid of them and insisted on asking only CAD \$10.

The ear pads really did smell so strongly of chemicals that my roommate would not let me keep them indoors until I cleaned them. I spent five days washing them, and yes, you read that correctly. I washed the ear pads with soap and water over and over again for five straight days.

The headphones you see in the photo are either a pair of SIVGA SV004 headphones or a do it yourself (DIY) clone kit. It is not entirely clear whether the DIY kit is the original version or a copy.

Headphones with wooden ear cups certainly look beautiful, almost like a finely crafted piece of furniture. But do they actually sound good?

When I asked Google, its AI-generated overview gave me this answer:

"Headphones with wooden ear cups are valued for their natural acoustics, attractive appearance, and reduced resonances compared to plastic or metal enclosures."



The DIY kit I ended up with, or the SIVGA SV004, is available in two versions, one with 50 mm drivers and another with 40 mm drivers, along with adapter rings for the smaller drivers.

In my experience, the 40 mm drivers offer an advantage in terms of clarity, particularly for amateur radio communications. It's worth remembering that the legendary Sony MDR-7506 headphones, still found in countless recording studios around the world, use 40 mm drivers.

That said, my personal preference generally leans toward 50 mm drivers, not 40 mm and certainly not 70 mm.

Since there is considerable debate over whether wooden ear cups really make a significant difference, I am not going to present frequency response graphs, measurements, or technical data. About half the people you ask will tell you that wood provides a better sound, while the other half will insist there is no audible difference at all.

Rather than taking sides in that debate, I would simply like to highlight a few well known wooden headphones and their approximate prices as of May 2026.



SIVGA Audio is a Chinese manufacturer. Its M300 model sells for about US\$92, while the Nightingale Pro, a planar magnetic in-ear monitor (IEM) featuring a 14.5 mm driver, is priced at approximately US\$417. Its published specifications include a frequency response of 20 Hz to 40 kHz and a sensitivity of 107 dB $\pm$ 3 dB. That is a very expensive set of earphones, costing more than many amateur radio transceivers.



SIVGA's current over ear model, the SV021, is a closed back design with 50 mm drivers and sells for approximately US\$252. If appearance alone were the deciding factor, I actually prefer the older models, such as the SV004 that I own.

For a bit more money, about US\$2,000, you can step up to the Meze Audio POET, a compact pair of planar magnetic headphones capable of reproducing frequencies from 4 Hz to 96 kHz. They are shown in the final image of this article.

The extended high frequency response allows for a cleaner signal within the limits of human hearing, while the published total harmonic distortion (THD) is rated at less than 0.05%. They are somewhat heavy, however, weighing 405 grams.



JBL does not currently manufacture headphones with wooden ear cups. Sony also does not currently offer any mainstream or flagship headphones with wooden ear cups. However, the company created one of the most legendary wooden headphones ever made, the Sony MDR-R10, introduced in 1989. The Sony MDR-Z1R does not use wooden ear cups. Instead, it features aluminum housings engineered to emulate the resonance and natural acoustic characteristics of wooden chambers. Sony rates the headphones with a frequency response extending to 120 kHz. Other popular wooden headphones include the FiiO FT1, which sells for approximately US\$150 and features 32 mm drivers.

Fostex also produces several well regarded headphones with wooden ear cups, and I'll leave it to you to explore their lineup and discover the different models available.

In my humble opinion, I would never spend more on a pair of headphones than I would on the transceiver itself. I can only compare them with the headphones I use regularly. The SIVGA SV004 has thick, very comfortable ear pads that make it easy to wear for hours at a time. The sound is perfectly respectable. It is pleasant and well balanced without particularly excelling in any one area. Clarity is good, instrument separation is good, muddiness is well controlled, and the sense of space is good. That said, they do not outperform my Sony MDR-V700 headphones with 50 mm drivers. Those deliver a more impressive sound, but they clamp your head like a vise and are anything but comfortable. I say this about both the genuine Sony version and several nearly identical Chinese models that I have seen. My personal opinion, with no proof to back it up, is that they may have come from the same production line and were simply rebranded under different names and sold at different prices. If you ever come across an inexpensive pair of wooden headphones as I did for CAD \$10, don't hesitate to buy them. After a deal like that, chances are everyone will notice the headphones before they notice your transceivers



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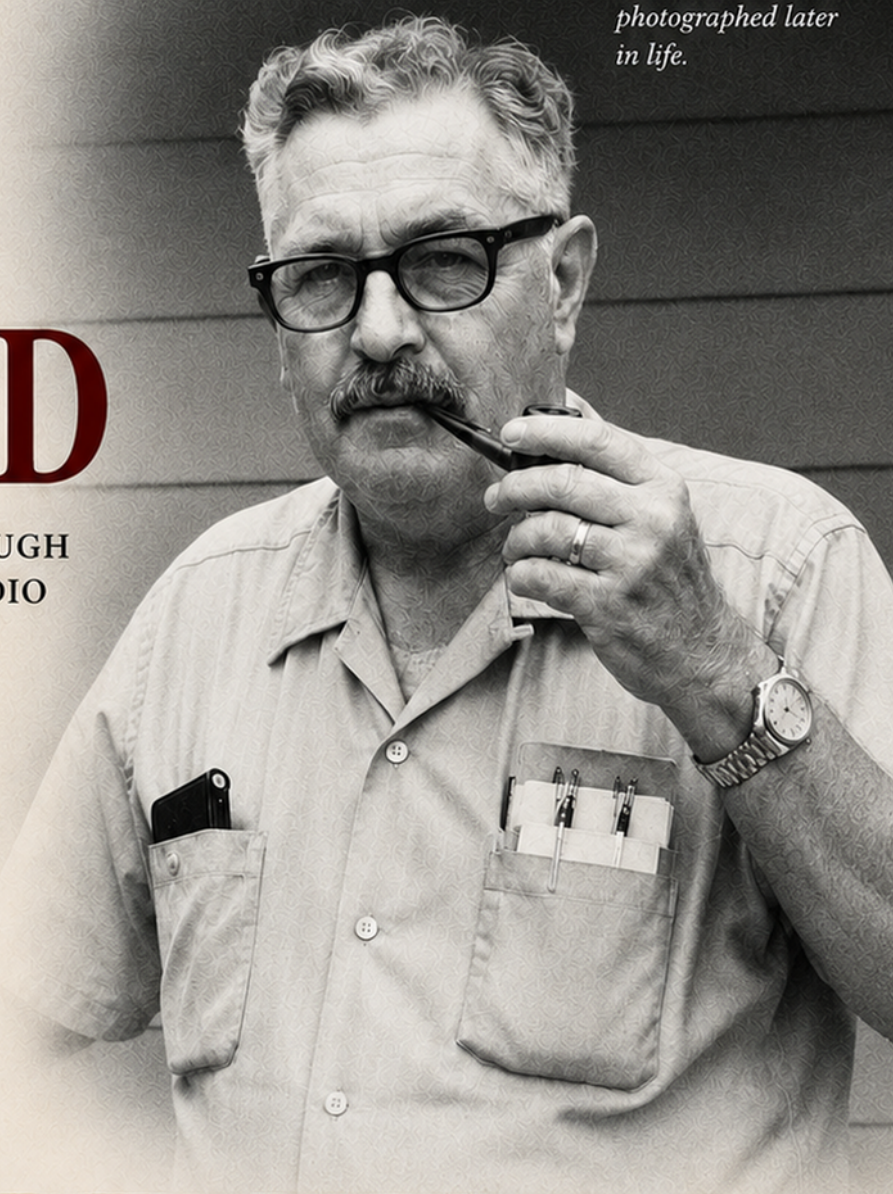
When the MUSIC STOPPED

A GRANDFATHER'S JOURNEY THROUGH
THE GOLDEN AGE OF AMATEUR RADIO

In the early 1920s, a fifteen-year-old Ernest Hedley Hobbs heard the world go quiet. Broadcast music stations had vanished. But in that silence, he heard something else—a new kind of signal.

That curiosity led him from a boy with a crystal set to one of the earliest radio amateurs in America, helping shape the future of a global community.

*Ernest Hedley Hobbs,
photographed later
in life.*



“*The story begins not with a transmission,
but with a silence.*”



ABOUT THE AUTHOR

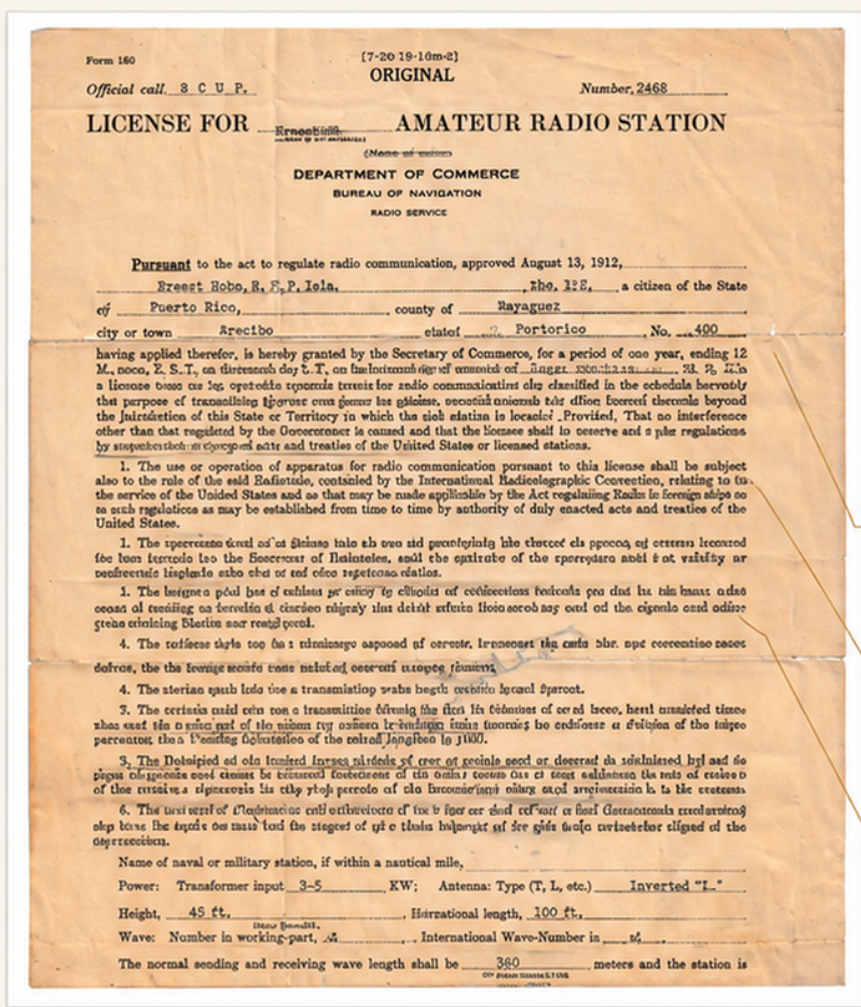
Dennis J. Lazar, W4DNN

Licensed since 1960, Dennis J. Lazar, W4DNN, is a longtime amateur radio operator, writer, and historian. A former QRP editor for *CQ Magazine* and contributor to *QST*, he has published numerous articles documenting amateur radio operators, technology, and history. This article was developed from interviews and family documents related to Ernest Hedley Hobbs.

THE DOCUMENT

A LICENSE FOR A NEW ERA

The paper trail shows amateur radio moving from informal experimentation into a regulated technical service.



FROM PERSONAL CALL SIGNS TO GOVERNMENT ASSIGNMENTS

Until the early 1920s, amateur operators often selected their own call signs, usually consisting of a district number and personal identifier. Following a series of court decisions, the U.S. government assumed responsibility for issuing unique call signs and licenses.

Wireless technology was evolving rapidly. Vacuum tubes, then commonly referred to as valves, became more affordable and increasingly replaced earlier spark technology. By the late 1920s, regulations and technology had effectively brought the spark era to an end.

AGE 15

The license places Ernest at the threshold of a regulated hobby.

8CUP

A government-issued call sign replaced informal personal identifiers.

DEPARTMENT OF COMMERCE

Early amateur licensing was administered through federal radio service rules.

At age fifteen, Ernest Hobbs received station license 8CUP from the U.S. Department of Commerce.

1922
License 8CUP

1923
Catalina Island OSL

1928
Federal call sign W2ADM

DOCUMENTARY EVIDENCE



Historic Catalina Island QSL documenting one of the earliest long-distance amateur radio achievements accomplished with only ten watts.



Later federal license showing the evolution from early Department of Commerce licensing to the Federal Radio Commission era.

THE END OF SPARK

Spark transmitters dominated early wireless, but vacuum tube technology rapidly changed the service. By the late 1920s, the spark era had effectively ended.

THE WORLD OPENS DX ACROSS THE ATLANTIC

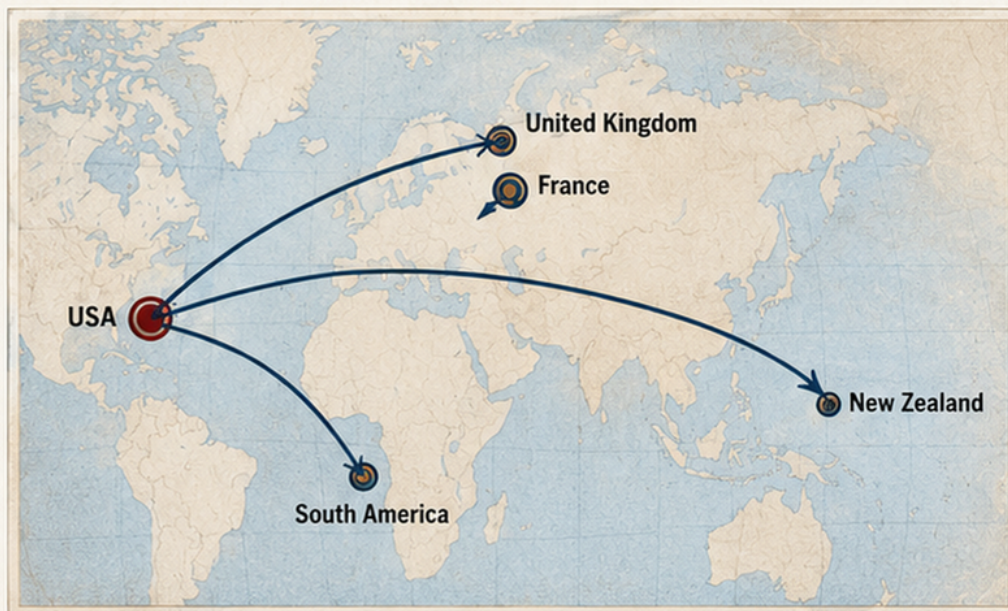
Within a few short years, amateur radio expanded from local contacts to worldwide conversations.

WHEN DISTANCE BECAME THE STORY

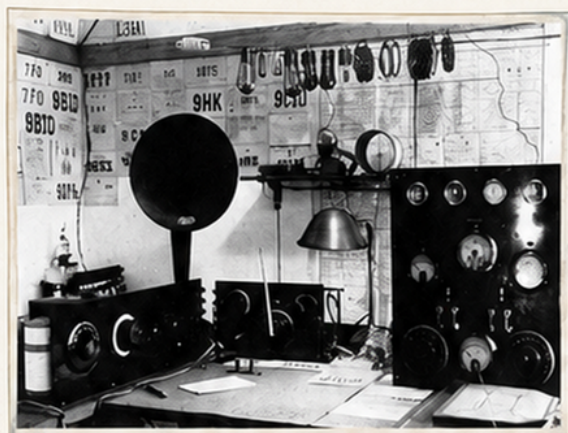
By late 1923, Ernest, now operating as 8DTB, was making history. He confirmed two-way contacts as far away as:

- France — November 27, 1923
- United Kingdom — December 1, 1923
- New Zealand — 1924

Only weeks later, amateurs across the United States and Europe were exchanging signals across oceans. What began with a boy listening in the dark had become a worldwide movement.



From local neighborhoods to distant shores, the airwaves became a bridge without borders.



Ernest's early station with home-built receiver and telegraph key.

A QSL FROM AFAR

This QSL card from a British operator confirms one of Ernest's earliest international contacts: proof that the airwaves had no borders.



British QSL card typical of early international amateur radio contacts.

DX TIMELINE



Nov. 7, 1923
First U.S.-France contact



Nov. 27, 1923
First U.S.-United Kingdom contact



1924
Expansion of amateur DX contacts



1927
Washington conference formalizes allocations



“By late 1923, Ernest was looking forward to something entirely new: long-distance communication.”

”

THE LEGACY CONTINUES

From Ernest's era to Steve's station, the technology changed, but the spirit did not.



Steve Hobbs, operating from his station today—carrying forward the passion that began with Ernest a century ago.

WORLD WAR II AND AMATEUR RADIO

By 1941, amateur operators supported the United States and allied forces with vital communications. After the war, new rules and a new licensing system strengthened the service and expanded the bands, opening the airwaves to thousands more.

Form No. 8 LICENSE NO. 1390

UNITED STATES OF AMERICA
FEDERAL RADIO COMMISSION • Prefix "W" not to be used until Oct. 1, 1928.

RADIO STATION LICENSE

CLASS Amateur CALL SIGNAL W2ADM

Ernest Hedley Hobbs is hereby authorized, subject to the provisions of the Radio Act of 1927 and the conditions mentioned in this license, to use and operate the radio apparatus herein described for the transmission of radio communications for a period of ONE YEAR from the date of issuance unless this license is sooner suspended or revoked.

This license shall not vest in the licensee any right to operate the station, nor any right in the use of the frequencies or wave lengths specified herein beyond the terms hereof, nor in any other manner nor at any other time or place than authorized herein. This license is expressly subject in terms to the right of use or control conferred by section 6 of said Radio Act.

The apparatus authorized to be used and operated by the licensee is located in the State of New Jersey, county of Essex, city or town of Newark, West Kinney Street, Number 38, and is described as follows: VT - ow, low, phone

This station is authorized for communication only with similarly licensed stations and on wave lengths or frequencies within the following bands:

Meters	Meters	Kilocycles
9.99 to 10.71	30,000 to 28,000	3.75 to 4.28
0.7477 to 0.7496	401,000 to 400,000	8,000 to 7,000
4.69 to 5.35	64,000 to 56,000	75.0 to 85.7
18.7 to 21.4	16,000 to 14,000	150.0 to 200.0

telephone permitted only in bands 160-175, 84.5-85.7, 4.69-5.85 meters.
with a power output of 200 watts.

and at all times unless interference is caused with other radio services, in which event a silent period must be observed between the hours of 8.00 and 10.30 p. m., local time, and on Sundays during local church services.

This station is not authorized to broadcast news, music, lectures, sermons, or any other form of entertainment.

This license is issued under and in accordance with the Radio Act of 1927, and all of the terms and conditions thereof are made a part hereof as though specifically set out in full herein.

Dated this 18th day of July, 1928

At New York, N. Y. By Ernest H. Hobbs

W. H. G. BULLARD, Chairman.
Ira E. Robinson, Secretary of Radio.

BC 6-4-1927 (revised) 11-30-27

Ernest Hobbs' radio station license, W2ADM, issued by the Federal Radio Commission in 1928.

WAR, SURPLUS GEAR, AND MEMORY

After World War II, surplus equipment flooded the U.S. market and sparked a new wave of interest. Then came the FCC in 1959, bringing structure to the bands and new opportunities for innovation.

Through every change, the heart of the hobby remained the same: communication, curiosity, and community.

THE LEGACY CONTINUES

Restrictions were lifted in 1945, activity resumed, and new generations joined the conversation. The equipment changed. The spirit did not.

Ernest's first spark a century ago still lights the path for thousands around the world.

“The music may have stopped, but the conversation never did.”



100+
YEARS OF HISTORY



GENERATIONS
OF OPERATORS



ONE SIGNAL
THAT CONNECTS US ALL



A PASSION
THAT NEVER STOPS

SWR
MAGAZINE

CONNECTING PASSIONS.
INSPIRING OPERATORS.



**Amid emerald shadows and ancient
air, communication finds its way to the
impossible.**

Photo by: dh8bqa

The Mystery of Top Band

By the SWR Editorial Team

The 160 meter band, known to amateur radio operators as Top Band, has earned its reputation. It is fascinating, unpredictable, and, for many operators, downright frustrating. Unlike the higher HF bands, where worldwide contacts can become almost routine, 160 meters demands patience, technical skill, and a solid understanding of radio propagation.

It is not a "difficult" band simply for the sake of being difficult. It is challenging because it occupies the lowest end of the HF spectrum, where the ionosphere no longer behaves like a reliable mirror. Instead, it absorbs, scatters, and transforms radio signals in complex and often unpredictable ways.

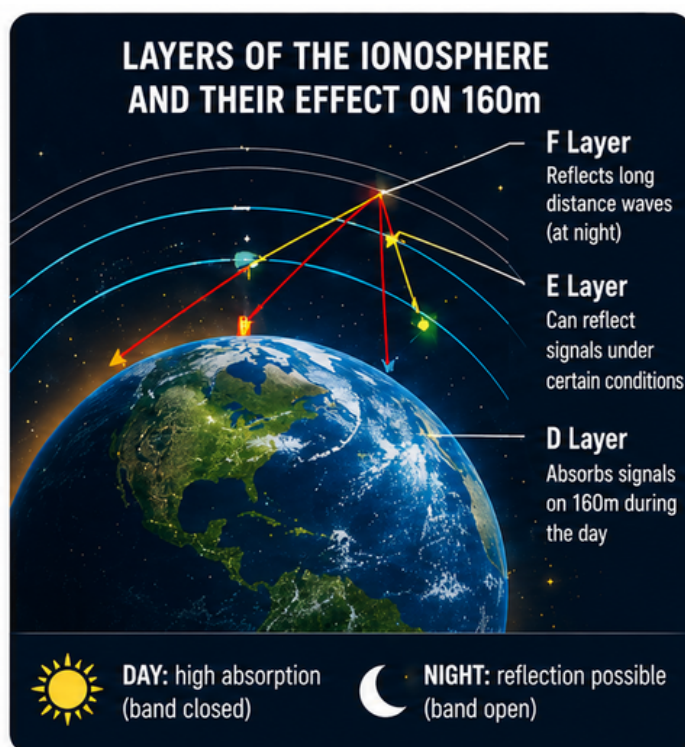
Photo by: pa1m.nl

A Band That Comes Alive at Night



The first rule of Top Band is simple: during the day, it almost doesn't exist. Throughout daylight hours, the ionosphere's D layer heavily absorbs signals on 160 meters, especially those transmitted at lower power levels. As a result, the band is generally ineffective for long distance DX operation. Once the sun sets, however, the D layer dissipates and the band comes alive.

At that point, the E and F layers of the ionosphere begin to play their role, allowing long distance reflections that make overnight and early morning DX contacts possible. Even then, stability is far from guaranteed. Propagation conditions can change dramatically in a matter of minutes.



The Invisible Challenge

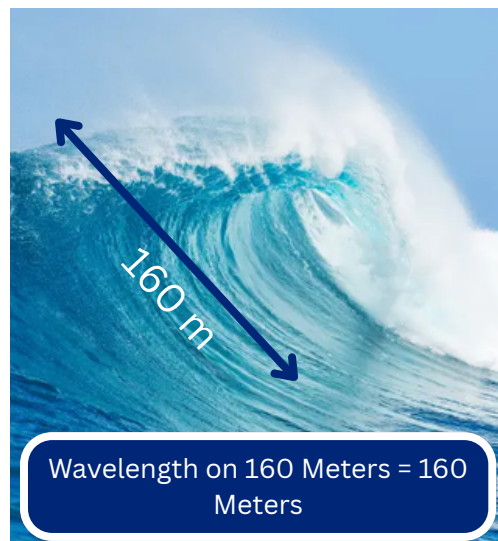
Physics vs. the Operator

The greatest challenge on 160 meters is not propagation alone, but the physics of the band itself.

At these frequencies, around 1.8 MHz, wavelengths are enormous, measuring approximately 160 meters for a full cycle. That has several important consequences:

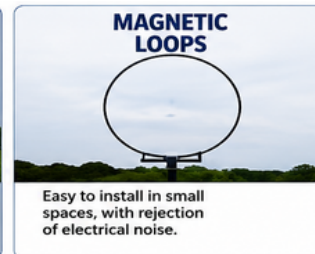
- Efficient antennas are physically large and often difficult to install.
- Ground losses have a major impact on performance.
- A well designed radial system becomes essential.
- The efficiency of small stations drops dramatically.

In other words, on 160 meters, your surroundings are just as important as the radio itself.



Antennas: Where Creativity Begins

Top Band is famous for turning amateur radio operators into inventive engineers.



The Silent Enemy: Noise

On this band, the biggest challenge is often not the signal itself, but the noise.

Sources such as:

- Switching power supplies (battery chargers, LED lighting)
- Solar power systems
- Modern household appliances
- Industrial interference

can raise the background noise to the point where even powerful stations become impossible to hear.

That is why Top Band rewards a quiet operating location just as much as it rewards transmitter power.

How to Reduce Noise

- Identify and eliminate sources of RFI around your station.
- Use line filters and ferrite chokes on power cables.
- Keep RF cables away from noise sources.
- Use dedicated receiving antennas whenever possible.
- Compare reception at different times of the day and night.

On 160 meters, patience isn't just a virtue. It's a tool.

Propagación: ciencia y paciencia

Propagation on 160 meters is closely tied to the behavior of the ionosphere, particularly the D, E, and F layers.

Key factors include:



Solar Cicle



Seasonal changes
(Winter provides the best
DX conditions in the
Northern Hemisphere.)



Geomagnetic
activity



Grey Line
propagation
(The twilight zone at
sunrise and sunset.)

The result is a band where success depends not only on your equipment, but also on being on the air at exactly the right moment.

The Charm of Top Band

Despite its challenges, or perhaps because of them, 160 meters has a remarkably loyal following.

It is a band where:

- Every DX contact feels earned.
- Listening is just as important as transmitting.
- Strategy matters as much as power.
- Even the quiet background can be as exciting as a strong signal.

Many operators agree on one thing: when you finally complete a difficult DX contact on 160 meters, the sense of accomplishment is unlike anything you'll experience on any other band.

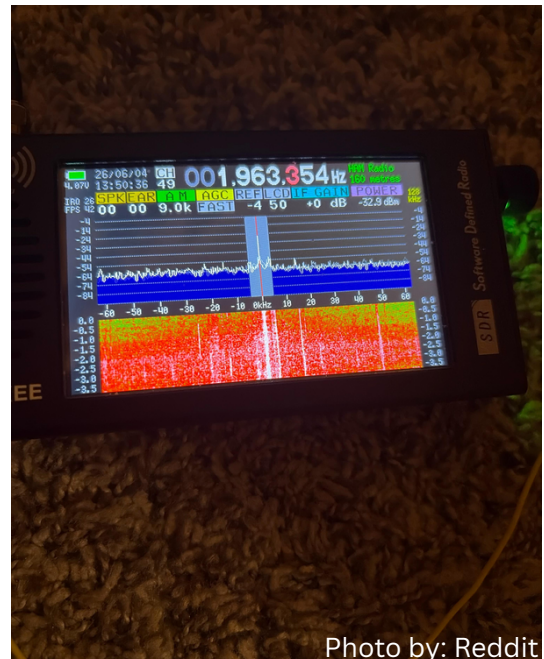


Photo by: Reddit

Conclusion

Top Band is not the fastest band, the easiest, or the most predictable. It is, however, one of the most authentic.

It is a band that challenges operators to understand the physics, improve their antennas, reduce noise, and, above all, spend more time listening than transmitting.

That is why, decades later, it remains the true mystery of amateur radio.



SWR ON THE AIR

From Our Readers

REAL OPERATORS. REAL STATIONS. REAL RADIO.

At SWR Magazine, we believe the heart of amateur radio lives in your shack, your antennas, and your experiences on the air.

We invite readers worldwide to share photos that capture the essence of ham radio in action.



WHAT WE'RE LOOKING FOR: —



SHACKS



ANTENNAS



FIELD DAY



JOTA / JOTI



CLUB ACTIVITIES



POTA / SOTA / BOTA



MOBILE SETUPS



PORTABLE STATIONS

REAL OPERATING MOMENTS

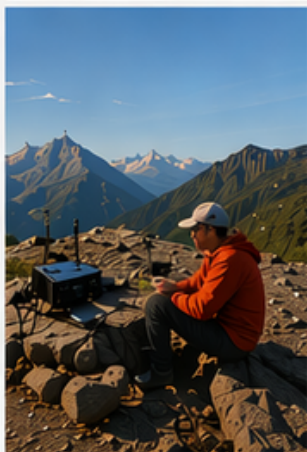


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tell our story!

ON THE AIR

AMATEUR RADIO CONTESTS THIS MONTH

IARU HF WORLD CHAMPIONSHIP

Dates: July 11–12, 2026, 12:00 UTC to July 12, 2026, 12:00 UTC

Modes: CW, SSB (Mixed Mode)

Eligibility: Worldwide, open to all amateur radio operators

Exchange: Signal report plus ITU zone

Note: Considered one of the most prestigious HF contests worldwide, representing IARU member societies and generating massive global activity across all HF bands.

ORIGINAL QRP CONTEST

Dates: July 4–5, 2026 (weekend event, duration varies by region)

Modes: CW and SSB

Eligibility: Worldwide, focused on QRP (low power) stations

Exchange: Signal report plus power category or serial number

Note: A niche but highly respected contest for low-power operators emphasizing skill over power.

RSGB IOTA CONTEST (ISLANDS ON THE AIR)

Dates: July 25–26, 2026, 12:00 UTC to July 26, 2026, 12:00 UTC

Modes: CW and SSB

Eligibility: Worldwide, open to all amateur radio operators

Exchange: Signal report plus IOTA reference number (or serial if not island station)

Note: One of the most popular DX-focused contests, highlighting island-to-mainland propagation and rare DX opportunities.

YOTA CONTEST (YOUNGSTERS ON THE AIR)

Dates: July 19, 2026 (24 hours, typical event structure)

Modes: CW and SSB

Eligibility: Worldwide, youth operators and mentors

Exchange: Signal report plus age or YOTA exchange information

Note: Promotes youth participation in amateur radio with strong international support and growing popularity.

MARCONI MEMORIAL HF CONTEST

Dates: July 4–5, 2026 (approx. 24 hours)

Modes: CW

Eligibility: Worldwide

Exchange: Signal report plus serial number or contest exchange per rules

Note: A traditional CW contest honoring Guglielmo Marconi, strongly supported in Europe and DX communities.

DARC RTTY SHORT CONTEST

Dates: July 14, 2026 (short-duration event, typically a few hours)

Modes: RTTY (digital)

Eligibility: Worldwide

Exchange: RST report plus serial number or location

Note: Fast-paced digital contest ideal for RTTY operators and short operating sessions.

In every contest, we don't just make contacts; we discover new voices, new countries, and the constant challenge of pushing ourselves further in ham radio.

PACKET RADIO

When Amateur Radio Connected to the Future At 1200 Baud



Before high speed connections, streaming, and modern digital systems, there was a world where data traveled slowly, yet with a magic all its own: packet radio.

For many amateur radio operators, especially during the 1980s and 1990s, this technology represented the first true bridge between traditional radio and digital networking. It was not the Internet as we know it today, but in many ways, it was a network built entirely over the air.

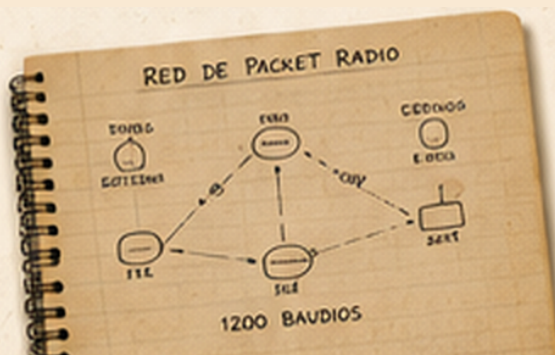


Photo by: Scott Brown

The Birth of a New Way to Communicate

Packet radio used the AX.25 protocol to transmit small data packets over VHF and UHF, typically at 1200 baud. By today's standards, that speed seems incredibly slow, but at the time it was revolutionary.

Messages, callsigns, weather reports, and even chat style conversations could be exchanged between stations. The idea of typing a message into a terminal and watching it appear at another station miles away was, quite simply, fascinating.



Nostalgia Corner

The TNC: The Heart of the System

No packet radio station was complete without the legendary TNC (Terminal Node Controller). This device served as the bridge between the computer and the radio.

Units such as the Kantronics, AEA PK-232, and MFJ-1270 became common in the stations of experienced amateur radio operators. The TNC converted digital data into audible AFSK tones, and back again, allowing the radio to communicate using data instead of voice.



Radio BBS: The Internet Before the Internet

One of the most memorable features of packet radio was the BBS (Bulletin Board System). These stations functioned as local servers that could be accessed entirely over the air.

There, operators could:

- Leave messages for other amateur radio operators.
- Read technical bulletins.
- Check DX information.
- Participate in asynchronous discussions.

It was a digital community built entirely on amateur radio.



Nostalgia Corner

Patience as Part of the Hobby

Unlike today's instant communications, packet radio taught an essential lesson: patience.

Connections could be unreliable, packets were sometimes lost, and noise was a constant enemy. Yet every successfully delivered message felt like an achievement. It was more than communication. It was a technical accomplishment.

```
*** CONNECTING TO: XE18BS ***  
CALLING XE1ABC VIA XE18BS-1  
SHHH  
DIF  
DISC  
*** CONNECTION ESTABLISHED ***  
NODES LINKED: 2 ACTIVE  
THIS IS THE PUEBLA 8BS ON PACKET:  
RMS:  
  
*** DISCONNECTED ***  
BYE
```

NO OLVIDAR:

- CHECAR ANTENA
- NIVEL DE AUDIO
- RETRY...
- PACIENCIA!



```
*** AMPRNET BULLETIN ***  
  
DX Cluster Update 12Z  
• XE1X is on via 12  
• K6YY is in USA tham path  
• Propagation Good on 28m
```



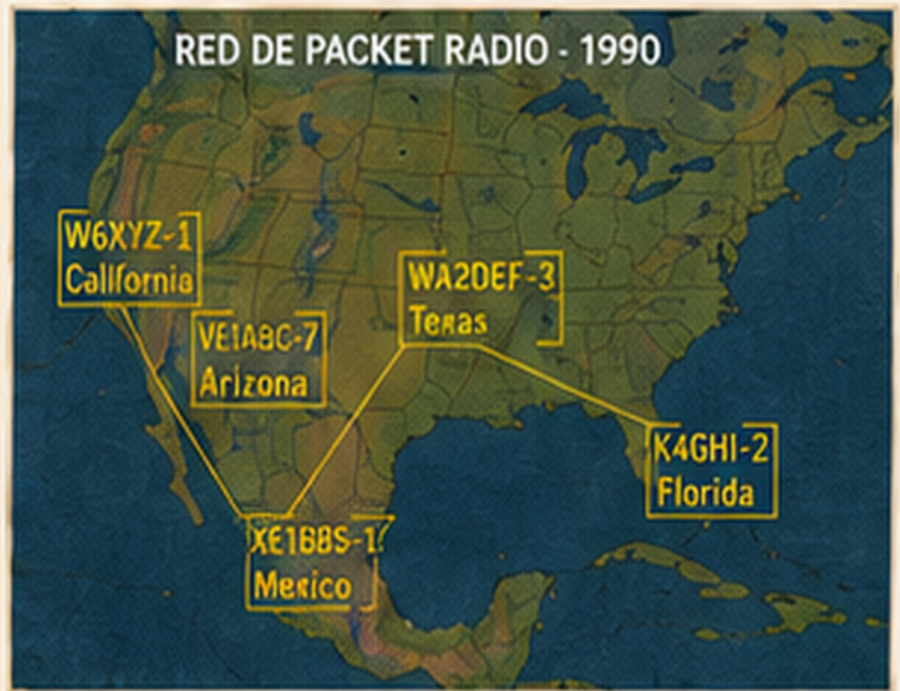
Nostalgia Corner

A Bridge Between Two Worlds

Packet radio marked an important transition, bridging the gap between traditional amateur radio and the digital age.

It introduced concepts that we now take for granted, including networking, messaging, nodes, and distributed connectivity.

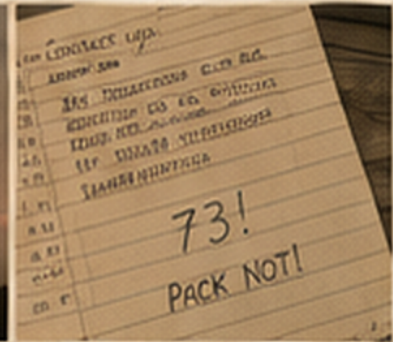
Although it has largely been replaced by faster and more efficient technologies, its legacy lives on through APRS, digipeaters, and many other digital data modes used in amateur radio today.



APRS: The Legacy Lives On

Many of the concepts pioneered by packet radio evolved into APRS (Automatic Packet Reporting System), enabling real time position reporting, messaging, and telemetry.

The spirit remains the same: data traveling over the air, connecting people through amateur radio.



In Nostalgia Corner, we continue exploring the technologies that, while they may seem simple or slow by today's standards, helped pave the way for modern amateur radio.

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**No Place Is Too Far
Away for a Signal with
Purpose**





SCHEDULED EVENTS AND ACTIVITIES FOR JULY 2026

Conventions, Hamfests, and In-Person Events

**SPECIAL
EVENTS**

- **Ham Radio Outlet Summer Events – July 2026 (dates vary) - United States** - Ham Radio Outlet
Regional events held at various Ham Radio Outlet (HRO) stores featuring equipment demonstrations, special deals, technical workshops, and meetups for local ham radio operators.
- **HRAC Firecracker Hamfest – July 4, 2026 - Harrisburg, Pennsylvania, USA** - HRAC Firecracker Hamfest A traditional Independence Day hamfest featuring swap tables, used radio gear, amateur radio license exam sessions, social activities, and a strong local ham radio community atmosphere.
- **SCARC Hamfest – July 12, 2026 - Augusta, New Jersey, USA** - SCARC Hamfest A regional hamfest featuring a swap meet, vendor tables, FCC amateur radio license exam sessions, and activities hosted by local ham radio clubs from the Northeastern United States.
- **Batavia Hamfest – July 18, 2026 - Alexander, New York, USA** - Batavia Hamfest A classic New York State hamfest featuring new and used radio gear, club gatherings, prize drawings, and participation from ham radio operators across the region.

On-the-Air Activities / Special Event Operations

- **IARU HF World Championship – July 11-12, 2026** - An international contest sponsored by the International Amateur Radio Union (IARU) in which stations around the world operate for 24 hours on the HF bands (160 through 10 meters). It is one of the premier events on the annual HF contesting calendar.
- **Marconi Memorial Contest HF – July 4-5, 2026** - Europe and Worldwide - Marconi Memorial HF Contest An international HF contest held in honor of Guglielmo Marconi, featuring activity across the HF bands with a strong emphasis on CW operation. The event attracts highly skilled contest stations and broad participation from the worldwide ham radio community.
- **RSGB IOTA Contest – July 25-26, 2026** - Worldwide (Islands) - RSGB Islands on the Air (IOTA) Contest An international operating event in which stations operate from islands around the world, creating intense DX activity across the HF bands. It is one of the most popular annual events for DXers and contest operators.

By: Yanira Maldonado, WP4QOE

Female Frequency

The Legacy We Leave on the Air

Dedicated to all the hams who understood that the best transmission isn't always the one that travels the farthest, but the one that leaves a lasting mark on someone else's life.

There is a question that few of us ever ask ourselves as ham radio operators: What will remain of us when, one day, our station falls silent?

Amateur radio teaches us to listen, to serve, and to share. As the years go by, we come to realize that the true reach of a transmission isn't always measured in miles. More often, it's measured in lives.

We all know extraordinary hams. They aren't always the ones with the biggest towers or the most impressive stations. More often, they're the ones who patiently mentor others and help new operators grow.

We spend our time counting QSOs, DXCC entities, awards, and accomplishments. All of those things have value, but there is one achievement that will never appear on a certificate: the people whose lives we helped shape.

Knowledge that is kept to ourselves eventually disappears. Knowledge that is shared becomes a legacy.

"The best hams are not the ones who log the most contacts; they are the ones whose influence can still be heard long after their station has gone silent."

As a woman in ham radio, I've learned that the best way to honor those who helped us along the way is to do the same for someone else.

One day, our voices will no longer be heard on the air. It won't matter how much equipment we owned. What will matter is how many people we inspired.

Think about your callsign.

Will people remember your accomplishments... or will they remember how you made them feel?

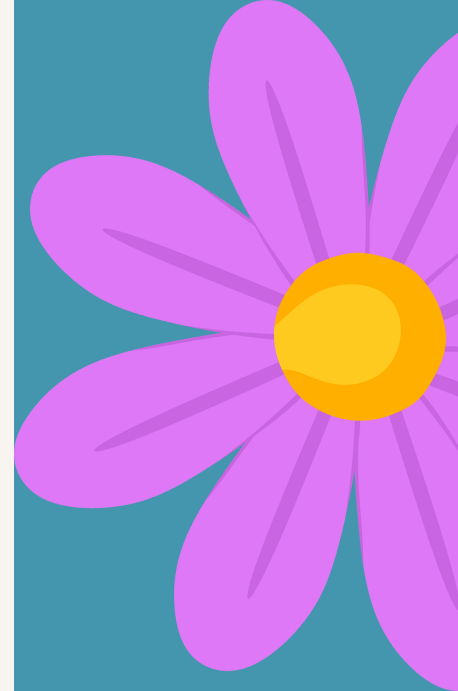
Final Reflection

Radio waves can travel thousands of miles...

But the values of a ham radio operator can travel across generations.

Our callsign identifies our station.

Our legacy identifies who we were.



Photos by: HamRadioWorld



Power,
Precision,
Reliability

IS THE YAESU FTDX 1200 STILL RELEVANT TODAY?



By the SWR Editorial Team

Still a Classic



The Yaesu FTdx-1200 is an HF and 6-meter transceiver that combines a high-performance receiver with traditional front-panel controls, delivering solid, dependable operation for DXers and contest operators.

A Modern Classic That Refuses to Fade Away

In a market dominated by the latest SDR transceivers, touchscreen displays, and increasingly sophisticated spectrum scopes, many hams wonder whether radios introduced more than a decade ago still deserve a place in today's shack. One such rig is the legendary Yaesu FTdx-1200, introduced in 2013 as part of Yaesu's prestigious FTdx lineup. The question is inevitable: Is it still relevant in 2026? The short answer is yes. For many operators, it remains an outstanding choice.

Built for DX

When Yaesu introduced the FTdx-1200, its goal was to deliver performance approaching that of its flagship models at a more affordable price point. The result was a 100-watt HF/6-meter transceiver featuring a robust triple-conversion receiver architecture, selectable 3, 6, and 15 kHz roofing filters, and a powerful 32-bit DSP.

Those features quickly earned the FTdx-1200 a solid reputation among DXers and contesters, especially on crowded bands where the ability to reject strong adjacent signals is critical.



The rear panel of the Sony CCD-1000 camera features several connectors and controls. On the left, there are two large circular connectors labeled 'XLR' and 'MIC', with a '3-18' label above them. Below these are two rows of smaller connectors: 'E' (Earth), 'P' (Power), 'S' (Signal), 'L' (Line), 'V' (Video), 'A' (Audio), 'B' (Bias), 'C' (Control), 'D' (Data), 'E' (Earth), 'F' (Field), 'G' (Gate), 'H' (Horizontal), 'I' (Interlace), 'J' (Jitter), 'K' (Key), 'L' (Lock), 'M' (Master), 'N' (Normal), 'O' (Output), 'P' (Phase), 'Q' (Quality), 'R' (Range), 'S' (Speed), 'T' (Time), 'U' (Unit), 'V' (Voltage), 'W' (Weight), 'X' (X-axis), 'Y' (Y-axis), 'Z' (Z-axis). In the center, there is a 'DC IN' jack, a 'DC OUT' jack, and a 'DC IN/OUT' switch. To the right of these is a large cooling fan. Below the fan is a 'DC IN/OUT' switch and a 'DC IN/OUT' jack. On the far right, there is a 'DC IN/OUT' jack and a 'DC IN/OUT' switch.

- For many hams, it continues to deliver one of the best performance-to-price ratios available, proving that a well-designed radio never really goes out of style.

SSTV

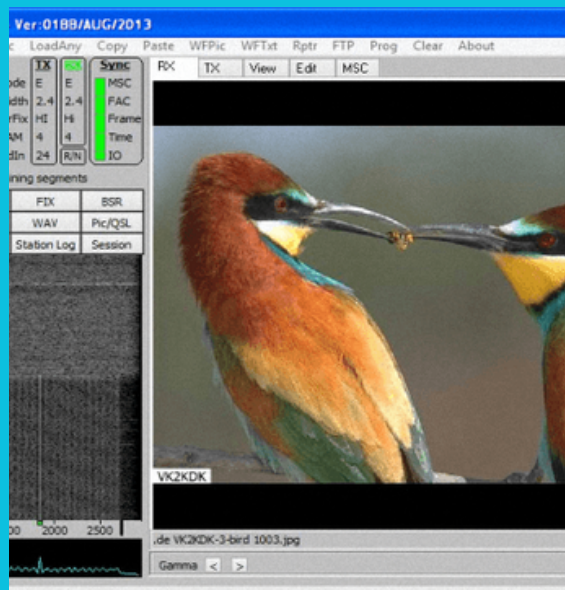


Photo by: vu2nsb.com

THE NIGHT MY SIGNAL BECAME A PHOTOGRAPH

By: Abimael Padro KP4RY

I still remember the first time I watched an image appear on my computer screen after being received over the air. I had spent years talking with stations around the world, exchanging signal reports, and participating in contests, but this experience was different. I wasn't listening to a voice or copying Morse code. I was watching a photograph travel thousands of miles across the airwaves.

That night, I discovered the fascinating world of Slow Scan Television, better known to hams simply as SSTV. Like many amateur radio

operators, I had heard the term countless times. I knew some fellow hams were transmitting images on the HF bands, but I had never taken the time to explore it. That changed one day while tuning across the 20-meter band, when I heard a series of unusual sounds that resembled a cross between electronic whistles and the soundtrack of a classic science fiction movie.



My curiosity got the better of me.

I started researching SSTV, installed decoding software on my computer, connected the audio from my transceiver, and waited patiently.

Then it happened.

An image began to appear, one line at a time.

First came a band of color.

Then another.

Next, a flag.

Finally, the face of a European ham appeared alongside his callsign.

I remember thinking:

"I'm watching a photograph being transmitted by radio from the other side of the Atlantic!"

From that moment on, I was completely hooked.



What Is SSTV, Really?

When I explain SSTV to people who aren't familiar with amateur radio, I usually tell them it's like sending a photograph over the Internet... except it travels entirely over the air using radio waves.

Of course, that comparison has its limits.

SSTV was developed long before the Internet as we know it today. It was designed to transmit still images using a very narrow bandwidth, making it ideal for the limitations of radio communications.

While video requires an enormous amount of data every second, SSTV sends a single image



slowly, one line at a time, converting color and brightness information into audio tones that can be transmitted over a standard amateur radio frequency. That's why it's called Slow Scan Television, or SSTV.

It doesn't transmit live video.

It transmits still images.

And that simplicity is part of what makes it so fascinating.

My First International SSTV Contact

After several decoding sessions, I finally decided it was time to transmit my own image.

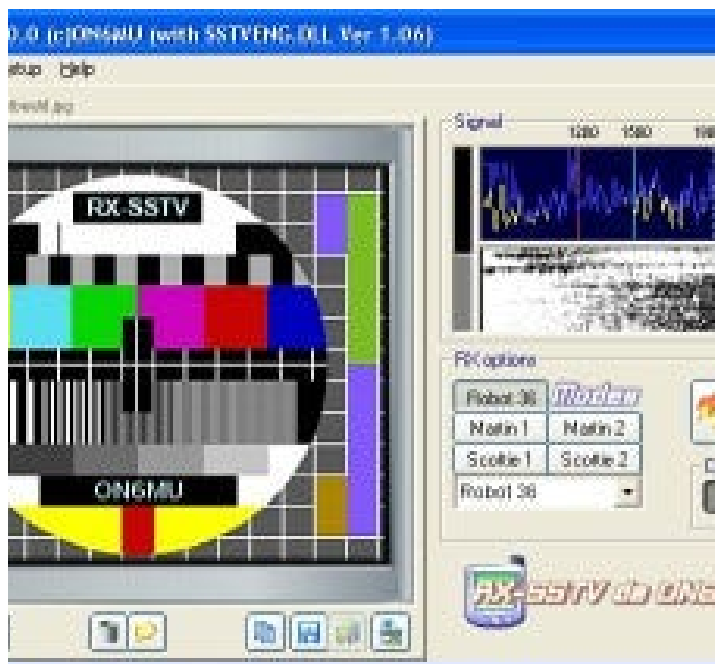
I created a simple SSTV QSL card featuring my callsign, KP4RY, a photograph of Puerto Rico, and a few details about my station.

I have to admit, I was a little nervous.

I had logged thousands of voice QSOs over the years, but this mode felt completely new to me.

Once the transmission was finished, I waited.

Several minutes passed.



Then a message appeared on my screen. A ham in Germany had copied my image perfectly. Within minutes, reception reports arrived from Spain, Italy, and Brazil. That experience made me realize something truly remarkable. A single image has an extraordinary ability to connect people. Through SSTV, we can share our face, our station, our country, our antennas, or even a glimpse of our personal experiences. It's a different kind of communication more visual, and often, more personal.

Even the International Space Station Uses SSTV

One of the most exciting aspects of this mode is that SSTV has even made its way into space. On numerous occasions, ARISS (Amateur Radio on the International Space Station) has conducted special SSTV transmissions from the International Space Station (ISS), allowing hams around the world to receive commemorative images directly from orbit.

Thousands of hams around the world point their antennas toward the sky to receive images transmitted from more than 400 kilometers (250 miles) above Earth. The first time I successfully decoded an SSTV image from the International Space Station, I felt the same excitement I experienced when I made my very first DX contact.

The thought that a photograph had traveled from an orbiting spacecraft all the way to my station in Puerto Rico was simply incredible.

A Perfect Mode for Learning

One of the things I enjoy most about SSTV is that it brings together several different aspects of amateur radio.

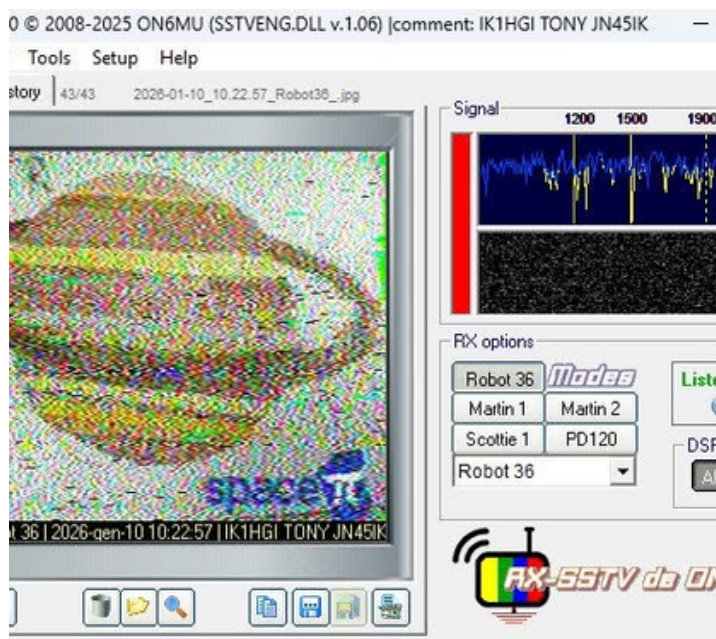
Along the way, you learn about:

- HF propagation
- Audio setup and signal levels
- Digital interfaces
- SSTV software
- Antennas
- Computer integration
- HF operating techniques

Another great advantage is that SSTV doesn't require expensive equipment.

Many hams get started using the same HF transceiver they use for voice operation along with a basic computer.

With just a modest station, you can be receiving SSTV images in a matter of minutes.



Much More Than Photographs

Over time, I discovered that the images exchanged through SSTV tell stories.

Some showcase impressive ham shacks.

Others feature local scenery.

Many include family photos, beloved pets, or homebrew projects.

Every image reflects something about the personality of the operator on the other end of the QSO.

That makes every transmission a small window into another corner of the world.

Final Thoughts

After all these years in amateur radio, I'm still amazed by the ability of radio waves to bring people together.

We can communicate by voice.

We can use Morse code.

We can exchange digital data.

And we can even send photographs using a technology developed decades ago that continues to inspire the same sense of wonder today.

Every time I hear the unmistakable tones of an SSTV transmission, I'm taken back to that very first image slowly appearing on my screen.

One line at a time.

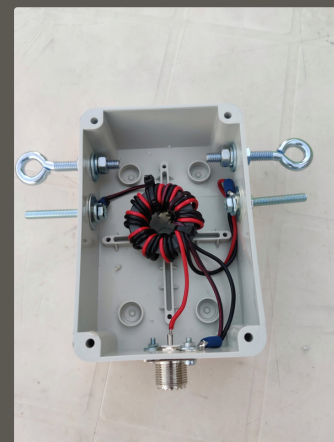
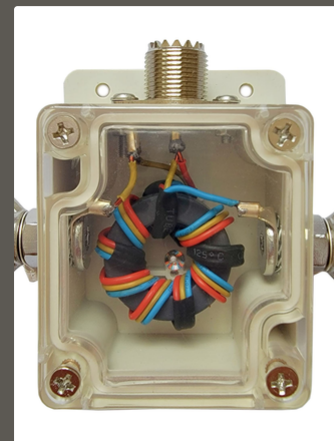
One color at a time.

A small piece of the world traveling through the air.

And in that moment, I'm reminded of why I fell in love with this incredible hobby in the first place.



**TWO BALUNS: WHEN
THEY HELP... AND WHEN
THEY COMPLICATE YOUR
SIGNAL**



When Two Baluns Are Better Than One... and When They Can Get You Into Trouble

By: Julio Mercado WP4PUX

A few days ago, one of those deceptively simple questions came up that always seems to spark a great ham radio discussion:

"What happens if I install one balun at the radio and another at the antenna?"

As with so many things in amateur radio, the right answer is: it depends.

Many hams assume that if one balun is good, two must be even better. Others believe using two baluns is like taking the same medicine twice for the same illness a waste of money.

As usual, the truth lies somewhere in between.

My Favorite Combination

If you install a 1:1 current balun (choke) at the antenna feed point and another 1:1 current balun next to the transceiver, you can end up with an exceptionally clean system.

The balun at the antenna does its traditional job: it keeps RF current from flowing back on the outside of the coax shield and helps the antenna perform the way it was designed to.

Meanwhile, the balun at the radio acts like a true bodyguard for your station. Its job is to keep the coax from carrying electrical noise into the shack from computers, switching power supplies, LED lighting, battery chargers, and all the other modern gadgets that seem determined to ruin our favorite HF bands.

The result is a quieter receiver, less unwanted RF where it doesn't belong, and a much lower chance of getting that memorable RF bite from the microphone a friendly reminder that electricity is still faster than you are.

A Trick Some RF Engineers Use

There's another configuration that's less common, but remarkably clever.

When the antenna is located a long distance from the radio, some operators use an impedance transformer at the shack end and an identical transformer at the antenna end, with the second one connected in reverse.

The idea is to raise the impedance at the beginning of the feed line so the RF travels through the cable with lower losses. At the antenna, the second transformer converts everything back to the proper impedance.

When properly designed and matched to the system, it's an elegant and effective technique.

It's not magic.

It's engineering.

Now Comes the Fun Part...

There's also a great way to turn a perfectly good antenna installation into a first-class frustration generator.

Imagine connecting a 4:1 balun at the transceiver and another 4:1 balun at the antenna without doing any calculations.

Your radio expects to see a 50-ohm load.

What it actually ends up seeing could be just about anything except 50 ohms.

The result?

The SWR goes through the roof, the transmitter folds back its power to protect itself, and the operator starts looking



suspiciously at the antenna, distrustfully at the coax, and eventually at the poor family cat as the likely culprit.

The antenna itself may be perfectly built, but the system as a whole can be so badly mismatched that you'll barely be able to get on the air.

The Bottom Line

Using two baluns can be either an excellent idea or a terrible one.

If they're both 1:1 current baluns (chokes), one at each end of the feed line, you're usually improving common-mode isolation while reducing RF feedback and electrical noise.

If they're impedance-transforming baluns, however, you need to be certain that the overall system is designed so the transceiver still sees the 50-ohm load it expects.

In ham radio, just like in cooking, success isn't about adding more ingredients. It's about using the right ingredients in the right place.

And remember: when something isn't working, before blaming the manufacturer, the band conditions, or your neighbor, check the impedances.

More often than not, that's where the real culprit is hiding.

From Noise to DX: How I Improved My Reception in the City

A personal journey to reduce interference,
improve reception, and enjoy DX again
from an urban environment.

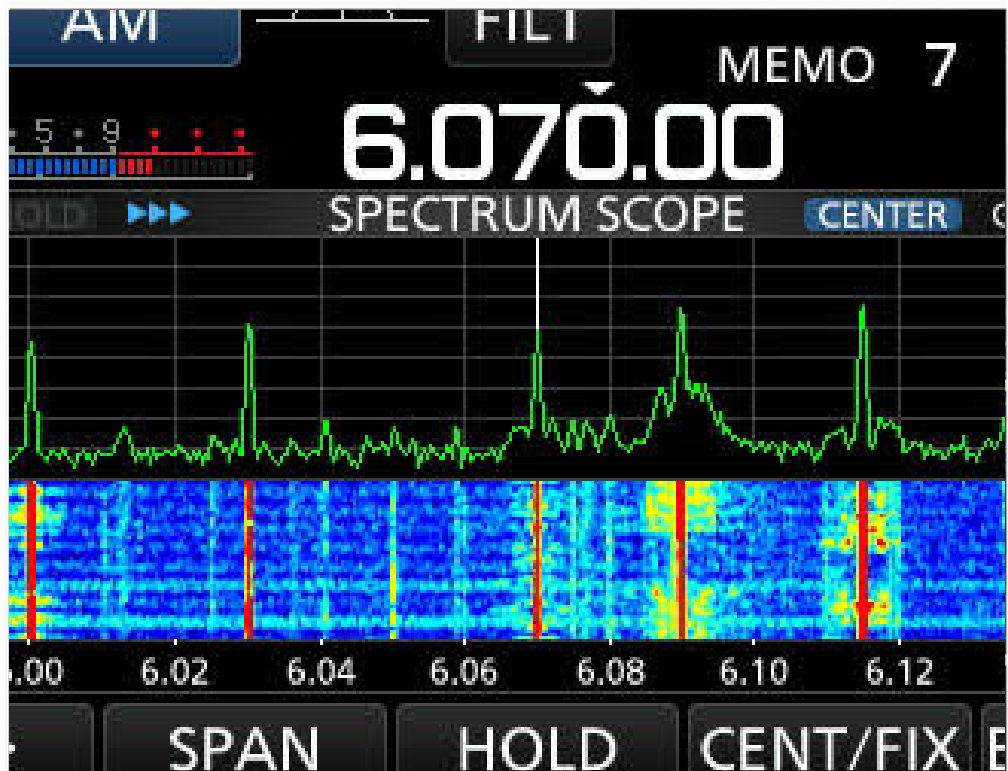
By: Juan Montijo WP4OV



Never did I think that my greatest enemy on HF would be inside my own house.

When I started operating from an urban environment, I imagined the challenges would be the antenna, propagation, or even power. But the real problem showed up as an invisible enemy: a constant, heavy, almost alive noise that covered the entire spectrum like an electric blanket.

At first I thought it was the band. Then I thought it was my gear. But over time I understood the truth: I was surrounded by interference.



Background noise can hide weak signals. Careful listening is the first step.

1

DISCOVERING THE NOISE

One night I decided to listen carefully. I turned off everything I could in the house and stayed with just the radio on. The sound was still there. That persistent “hiss” was not random.

I started unplugging devices one by one. The phone charger... the noise dropped a little. The TV... another change. The hallway LED lamp... there was one of the main culprits.

That was the moment I realized the city never goes quiet, even when everything seems turned off.

2

LEARNING TO IDENTIFY THE INVISIBLE

I turned my radio into a kind of detector. I moved around the house like an explorer, listening to how the noise level changed depending on the room and the devices.

I discovered the worst enemies were the quiet ones: switched-mode power supplies, routers, cheap chargers, and even nearby solar systems that injected constant noise into the spectrum.

It wasn't a single problem... it was a sum of small electrical storms.



3

FERRITE CORES: MY FIRST WIN

One day I tried something simple:
ferrite cores on the cables.

I didn't expect much, but the change
was immediate. It wasn't magic, but
it was a clear improvement. The noise
floor went down enough to start
hearing signals that were buried
before.

I began adding them everywhere:
USB cables, power leads, coax lines.
Each small adjustment gave me a little
more of the spectrum back.



Ferrite cores are simple, inexpensive, and very effective.

4

THE IMPORTANCE OF GROUNDING

Then I understood another
underestimated concept: grounding.

Not just for safety, but for signal
cleanliness. When I improved
the grounding of my station,
I noticed something important:
the receiver became quieter,
less nervous, more stable.

It was as if the station finally had
a point of balance.



A good ground improves safety and the quality of reception.

5

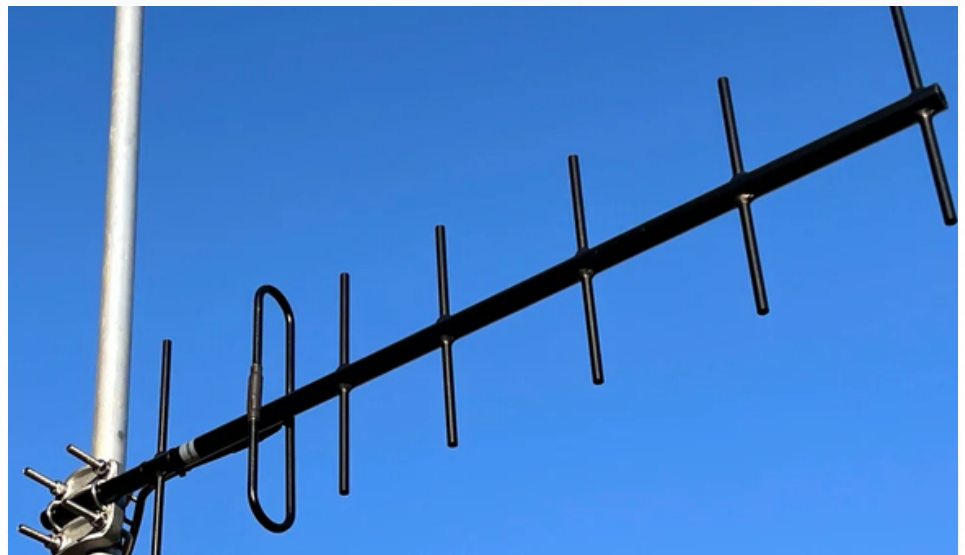
WHEN THE ANTENNA CHANGES EVERYTHING

But the real breakthrough came
when I changed the way I listened.

I tried more directional antennas.
And everything changed.

Suddenly, the noise was no longer
coming from everywhere. I could
aim my reception. I could reject
interference simply by pointing
the antenna.

It was the first time I felt I had
some control over the chaos.



A directional antenna helps you focus on the signal and reject the noise.

6

THE DAY I CAME
BACK TO DX

I remember that moment clearly.

It was a weak station, just above
the noise. At another time,
I would never have copied it.

But that night, between ferrite
cores, a better ground, and a well-
aimed antenna, the signal came
through loud and clear.

It wasn't just a contact.
It was a victory.



A weak signal, but clear. The satisfaction of a good DX contact.

7

WHAT I LEARNED



The real problem was never
distance. It was noise.



Noise is not always eliminated...
it's learned to be tamed.



Every improvement, no matter
how small, adds up.



The right antenna gives you
the power to choose what
you want to hear.



Patience and observation
are the best tools in ham radio.

Now, every time I turn on the radio
in the middle of the city, I no longer hear
frustration. I hear a technical challenge
that, with patience, can always
be solved.

“

**In urban ham radio,
DX isn't lost...
it's just hidden under
layers of noise, waiting
to be discovered.**

”





Hollywood Legend. Ham Radio Operator. Call Sign: KA6BJW

Marlon Brando wasn't just an icon on screen—he was also a licensed amateur radio operator who found connection, curiosity, and freedom on the airwaves.

“Radio is the most democratic of all communications. Anyone can talk to anyone, anytime, anywhere.”

— MARLON BRANDO

SWR 
THE VOICE OF
WORLDWIDE RADIO
AMATEURS

THE SHORT ANSWER:

Yes, Marlon Brando was a ham.

The legendary actor held an amateur radio license with the call sign **KA6BJW**.

More than just a casual hobby, radio was a passion that let him connect with people around the world—quietly and privately.

From his private island in French Polynesia to his homes in the United States, Brando used HF radio to make long-distance contacts across continents and oceans.

He valued the anonymity of the airwaves and the sense of community that comes from a shared curiosity about technology and communication.

A DEEPER STORY

Beyond the fame and the red carpets, Brando was fascinated by how radio waves could bridge vast distances.



NEXT TIME YOU HEAR A CALL SIGN...

remember that behind every operator is a person with a story—and sometimes, that story comes with an Oscar.

QUICK FACTS



Marlon Brando was licensed as an amateur radio operator with the call sign **KA6BJW**.



He made contacts all over the world, often using HF bands for long-distance communication.



Brando enjoyed the privacy and simplicity of ham radio—a world far from Hollywood spotlights.



His call sign is still remembered and respected in the ham radio community today.

Other Bands

LF, MF, and Microwaves... Exploring the Frontiers of the Spectrum

LF (Low Frequency) and MF (Medium Frequency): The Slow Lane of Radio

Imagine frequencies so low that their wavelengths are measured in kilometers rather than meters. That's the world of LF (30-300 kHz) and MF (300-3000 kHz).

The 160-Meter Band (1.8-2.0 MHz) - MF

- **Personality:** The Gentle Giant. Although technically the lowest HF amateur band, 160 meters is often considered a world of its own.
- **Propagation:** This is the ultimate nighttime band. During the day, signals are heavily absorbed by the ionosphere's D layer, limiting most contacts to a few hundred miles. After sunset, however, the band comes alive, allowing signals to span entire continents with its distinctive deep, mellow sound. During the winter months and periods of low solar activity, 160 meters becomes a premier DX band, especially for digital modes capable of pulling weak signals out of the noise.
- **The Biggest Challenge: Size.** A half-wave antenna for 1.8 MHz is about 80 meters (260 feet) long from end to end. That forces hams to get creative, using inverted-Ls, T-antennas, shortened dipoles with loading coils, or heavy-duty antenna tuners. It's the band where making the most of limited space becomes an art form.
- **The Reward:** Compared with the higher HF bands, 160 meters offers a unique operating experience and a close-knit community of dedicated, patient operators. Working DX on Top Band remains one of the highest achievements in amateur radio.

Photo by: VK3FS



Beyond 160 Meters: The Ultimate Frontier

Below 1.8 MHz, we enter what many hams consider almost mythical territory—the extreme edge of amateur radio experimentation.

- The 630-Meter Band (472-479 kHz) and the 2200-Meter Band (135.7-137.8 kHz): These are experimental allocations recently granted on an international basis. Operating here is pure pioneering work.
- Overwhelming challenges:
 - a. Colossal antennas: An efficient antenna at these frequencies is enormous. Operators often use top-loaded verticals, with an “umbrella” of wires at the top, to reduce physical height requirements.
 - b. Electrical noise: These frequencies are extremely sensitive to man-made noise sources such as switching power supplies, LED lighting, inverters, and power lines. Cleaning up your own home electrical environment becomes part of the hobby.
 - c. Strict power limits: Legal power levels are very low (around 1 W ERP on 2200 meters). Every milliwatt counts.
- The philosophy: This is minimalist, experimental radio. It's about proving what is possible when you are working against the limits of physics itself. A 500 km (300-mile) contact on the 2200-meter band is an epic achievement, one that can easily make the cover of amateur radio magazines. This is for the ham who values technical challenge above everything else.

Microwaves

Microwaves (Above 1 GHz): The Realm of Optical Precision

Now we jump to the opposite extreme of the spectrum, into frequencies above 1 GHz, where wavelengths shrink to centimeters and millimeters (23 cm, 13 cm, 9 cm, 6 cm, 3 cm, 1.2 cm, and beyond).

Propagation: Like Light

At these frequencies, radio waves behave almost exactly like light. Line-of-sight is everything. Obstacles matter in a very real way. Signals are easily absorbed by rain, fog, and even atmospheric oxygen. At first glance, this seems like a disadvantage, but for many hams, it is exactly what makes this part of the spectrum so fascinating.



The Microwave Culture: Homebrew Builds and RF Links

- “If you can see it, you can work it.”
Microwave communications require high-gain parabolic dishes or Yagi antennas that must be aimed with sniper-like precision. A one-degree error and the signal is gone.
- Homebrew Is the Norm
- Buying a commercial 10 GHz transceiver is rare and extremely expensive. The real appeal is building it yourself.
- Microwave hams are experts at repurposing components from satellite systems, WiFi gear, and professional RF links. A dish feedhorn can be nothing more than a carefully cut potato chip can, shaped with millimeter precision. It is true guerrilla RF engineering.
- Long-Range Communications
- With large antennas and a clear line-of-sight path (often mountain to mountain), it is possible to build stable voice or data links over tens or even hundreds of kilometers, effectively creating autonomous amateur radio networks.
- Unique Propagation Modes:
 - Rain scatter: Using a rainstorm as a reflective medium to communicate with stations beyond line-of-sight. The signal is not simply blocked by the rain, but scattered by the droplets, allowing a portion of the energy to be redirected toward distant stations.
 - “Tropos on steroids”: Tropospheric ducting that might yield 500 km on 2 meters can, under the right conditions at 10 GHz, extend to 2000 km or more returning the lower atmosphere into a surprisingly effective waveguide.

The 13 cm (2.3–2.4 GHz) and 9 cm (3.4 GHz) Bands: The Most Accessible Entry Point

These bands are often considered the gateway into the microwave world. They overlap with WiFi and other wireless



Photo by: VK3FS

link technologies, which means inexpensive components are widely available. A simple SDR module (such as an RTL-SDR) paired with a modified parabolic dish can easily become your first receiver on these bands.

Why Would Anyone Venture Here?

For the pure technical challenge: It's the ultimate expression of “can I make this work?”
For the sense of exploration: In these bands, you are the pioneer. Propagation maps are essentially blank.

For the niche “RF geek” community: These are small, tightly connected groups where sharing a breakthrough (like a new transistor that performs at 24 GHz) becomes major news.

For unique skill development: Microwave circuit design, waveguide measurements, antenna alignment—skills with real-world professional value far beyond amateur radio. These bands are not for everyone. But they are a reminder that amateur radio has no ceiling. There is always another frontier just beyond, a little more difficult, a little stranger, waiting for someone to say: “What if we try it?”

And there, in the silence of long waves or the whisper of millimeters, lies the purest essence of the hobby: human curiosity, turned into signal.

With this, we close our journey through the bands. In the next module, we'll move away from waves and equipment and focus on how to actually use them: operating protocol and on-air practice.

PROJECTS
TO BUILD
YOUR STATION

PORTABLE POWER BOX FOR FIELD STATION

FOR FIELD OPERATIONS

Reliable energy
where your radio
takes you.

For: Equipo editorial SWR
Design and build your own
portable "power box" for your
field operations, expeditions
and emergencies.



LiFePO4 BATTERY

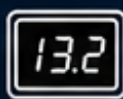
Safe, long-lasting
and reliable.

Alternative: 18650
cells with BMS.



TOTAL PROTECTION

Individual fuses,
main fuse, BMS
and circuit
breaker.



MONITORING

Digital voltmeter
to keep your
system under
control.



VERSATILE OUTPUTS

Anderson Powerpole
for radios, USB ports
for accessories
and charging.

CONCEPT

A reliable field station needs more than a good transceiver and an efficient antenna: it requires safe, stable and available power at all times.

This "power box" integrates in a single unit a high-performance battery with an intelligent distribution system, multiple protected outputs for your equipment and accessories.

MAIN COMPONENTS



MAIN BATTERY

- LiFePO4 (recommended for safety and thermal stability)
- Alternative: 18650 cell pack with BMS or custom series/parallel configuration



ELECTRICAL PROTECTION

- Individual blade fuses per output
- Main battery fuse
- BMS module (for 18650 case)
- Main circuit breaker



MONITORING

- Digital voltmeter LED or LCD
- (Optional) AC current meter for real-time monitoring



POWER OUTPUTS

- Anderson Powerpole connectors
- USB ports (5V) for accessories, phones or digital interfaces
- 12–13.8V DC output for HF/VHF/UHF radios

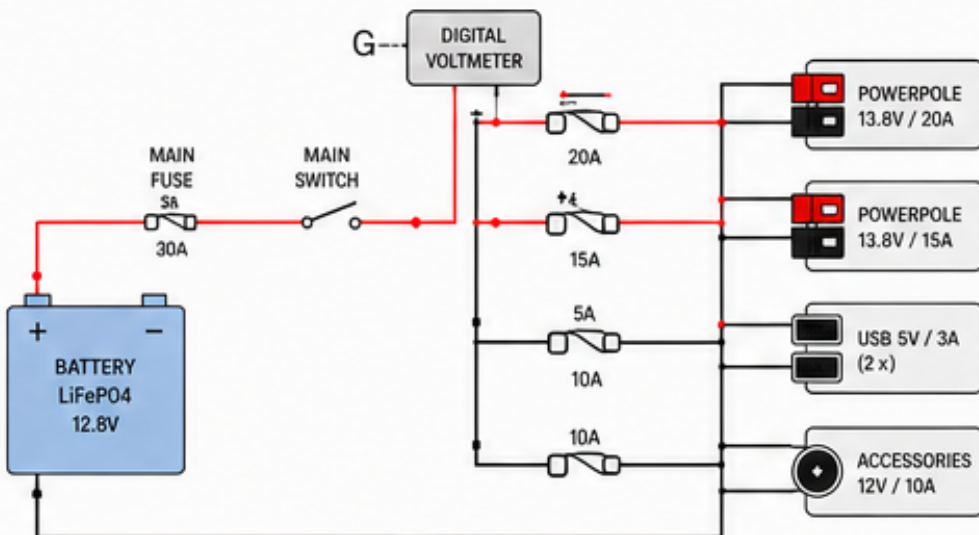
RECOMMENDED INTERIOR DESIGN

Typical distribution of the components inside the box.



- 1 Main circuit breaker
- 2 Main fuse
- 3 Fuse distribution block
- 4 Volt/Amp meter module (optional)
- 5 Powerpole and USB outputs
- 6 LiFePO4 battery (or 18650 pack)

WIRING DIAGRAM



CONSTRUCTION RECOMMENDATIONS

- Use adequate gauge wire (minimum 12–14 AWG for 20–30A)
- Properly crimp and insulate terminals
- Avoid unnecessary connections inside the enclosure
- Label all wires and outputs
- Ventilate if using 18650 cells
- Test load before connecting radio equipment



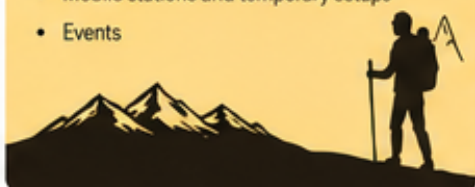
SAFETY FIRST

A poorly built power box can present risks of overheating or short circuit.

- Use fuses on every line
- Use a BMS on Li-ion batteries
- Do not exceed system current capacity
- Periodically inspect wiring

IDEAL APPLICATIONS

- POTA / SOTA activations
- Field Day
- Emergency communications (EMCOMM)
- Expeditions and remote areas
- Mobile stations and temporary setups
- Events



A PORTABLE POWER BOX IS NOT JUST AN ACCESSORY,
IT IS THE HEART OF A MODERN FIELD STATION.

IN RADIO, BEING PREPARED IS NOT AN OPTION... IT IS PART OF THE OPERATOR'S SPIRIT.



73!
GOOD
CONTACTS

HAM RADIO Zone

Osvaldo Soler, KP3N, new Section Manager for Puerto Rico in the ARRL

The American Radio Relay League announced the election of Osvaldo L. Soler (KP3N) as the new Section Manager for Puerto Rico, following the 2026 summer election process. In this role, Soler will be responsible for coordinating amateur radio activities across the island, supporting local clubs and volunteers, and serving as a liaison between the local ham radio community and the ARRL. His appointment marks a new chapter in the development and strengthening of amateur radio in Puerto Rico.



Matthew Butch, KV3JGB, new Section Manager for Eastern Pennsylvania.

The American Radio Relay League announced the appointment of Matthew Butch, KV3JGB, as the new Section Manager for Eastern Pennsylvania, assuming the position on June 8, 2026.

In this role, KV3JGB will be responsible for coordinating ARRL activities within the section, supporting local clubs and volunteers, and promoting the growth of amateur radio in the region. His appointment marks a new phase of leadership for the area's amateur radio community.



SWR

